NETWORK WORLD

THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 4, NUMBER 24 JUNE 15, 1987

IBM NETWORKING

SNA: struck by schizophrenia

BY L. DAVID PASSMORE
Special to Network World

Users clamoring for peer-to-peer communications are making IBM's traditionally hierarchical Systems Network Architecture schizophrenic. A new "peer SNA" is radically changing the way in which future IBM products will communicate and has the potential to not only coexist with traditional hierarchical SNA, but in many environments, to replace it.

Unfortunately, these two SNAs are somewhat less than compatible, and they may leave users' network nodes with a split personality.

When SNA was originally developed in

Continued on **page 29**

▶ *VALUE-ADDED NETWORKS*

FCC plan would make VAN costs skyrocket

Proposed access charges could drive up user costs.

BY PAM POWERS
Senior Editor

WASHINGTON, D.C. — The FCC proposed lowering the boom on enhanced service providers last week by imposing access charges that would sharply increase costs for value-added network (VAN) vendors such as Telenet Communications Corp. and Tymnet/McDonnell Douglas Network Systems Co.

The proposal, which met with immediate resistance from the VAN providers, is expected to cause a significant increase in rates for users.

The Federal Communications Commission proposal would eliminate the access charge exemption that the enhanced service providers have enjoyed since 1983. The charge, which would be levied against all enhanced interexchange data communications service providers, would be paid to the local telephone companies for dial-up access to their networks.

The proposal sets a date of January 1988 for the implementation of the charge, but an FCC spokeswoman said that date is subject to change.

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▶ *100 PRODUCTS*

NetView upgrade leading IBM blitz

New VTAM version, NET T-1 deal expected this week.

BY PAUL KORZENIOWSKI
Senior Editor

Amidst a flurry of up to 100 product announcements, IBM is expected this week to introduce more systems management capabilities for NetView, a new version of VTAM that supports LU 6.2, and a private label deal to sell Network Equipment Technologies Co.'s (NET) popular IDNX T-1 multiplexer.

J.E. Drescher, IBM's product manager for NetView/PC, outlined the upcoming NetView enhancements at the National Networks Conference in Washington, D.C. last week.

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NetView, NET deal among expected IBM announcements

- NetView Service Point Command Interface, which reduces custom programming requirements for NetView compatibility
- System console function that enables NetView to monitor and control System/370 architecture mainframes
- Commitment to provide Personal System/2 version of NetView/PC
- Commitment to bring NetView under Systems Application Architecture umbrella
- Release of VTAM that incorporates LU 6.2
- Private label agreement with Network Equipment Technologies Co. to market the IDNX T-1 multiplexer family

IBM

▶ *SOFTWARE DISTRIBUTION*

Tracking PC software use

BY JIM BROWN
New Products Editor

Companies evaluating electronic software distribution products anticipate that the central order-entry function and ability to keep tabs on users will be more beneficial than the actual electronic distribution itself.

Mainframe-based electronic software distribution products from companies such as Lotus Development Corp. in Cambridge, Mass., and DTSS, Inc. in Hanover, N.H., are intended to help companies control microcomputer software use and buying habits.

Lotus' Electronic Software Distribution System (LEDS), announced as part of Lotus'

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NETWORK LINE

News

▶ Paradyne is hoping to break into the high-end T-1 mux market by reselling Spectrum Digital's ISDX. Page 2.

▶ Users mull the pros and cons of using 386-based PCs in place of dedicated servers. Page 2.

▶ The RBHCs must halt their credit card advertising while the Justice Department decides if the service unfairly favors AT&T. Page 2.

▶ AT&T seeks to boost the rates of its Accunet Switched 56 service, claiming it does not garner enough revenue from customers who use the lines only for disaster recovery. Page 2.

▶ *Network World* readers rank what is — and what isn't — important when purchasing a local-area network. Page 4.

Features

When every second counts and costs, managers are increasingly relying on ACDs as a method of keeping telephone traffic running smoothly and inexpensively. Page 33.

NEWSPAPER

▶ *PAPERLESS TRANSACTIONS*

EDI user faces wary suppliers

"Fear of the unknown" cited.

This is the second in a three-part series on electronic data interchange and its evolution.

BY BOB WALLACE
Senior Editor

ORANGE, Calif. — Although Bergen Brunswig Corp. has successfully automated the way its customers submit purchase orders, the $3 billion pharmaceutical wholesaler has had a far tougher time convincing its suppliers to do business using Electronic Data Interchange (EDI).

Bergen Brunswig is looking to EDI — broadly defined

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▶ *T-1 MARKET*

Paradyne to resell mux

Gains rights to Spectrum Digital ISDX.

BY PAUL KORZENIOWSKI
Senior Editor

NEW YORK — Paradyne Corp. last week acquired resale rights to Spectrum Digital Corp.'s ISDX T-1 multiplexer in a deal similar to that struck recently between competitor Codex Corp. and T-1 multiplexer maker StrataCom, Inc.

At last month's International Communications Association show in New Orleans, Codex and StrataCom announced Codex will market StrataCom's IPX T-1 multiplexer.

The ISDX agreement represents the first fruit of a two-year OEM effort between Paradyne and start-up Spectrum Digital of Herndon, Va.

Paradyne and Codex, both best known as modem makers, are trying to carve lucrative new niches for themselves, as modems increasingly become commodity items and profit margins dwindle.

Paradyne's new multiplexer, the 3230, supports up to eight nonblocking T-1 trunks and conforms to D4 and extended superframing telephone company standards for T-1 lines. The 3230 can also support six nonblocked international T-1 lines, which operate at 2.048M bit/sec.

The 3230's DS1 formatting capability divides a T-1 line into 24 64K bit/sec channels. The multiplexer supports up to 508 voice and data channels and, for data communications, uses either byte-interleaving, which divides channels by eight-bit increments, or bit-interleaving, which divides them by single bits.

Synchronous data channel speeds range from 1.2K to 2.048M bit/sec, and asynchronous channels can operate at speeds up to 19.2K bit/sec.

The multiplexer's alternate routing feature automatically routes data around a failed link or node. Through a dynamic bandwidth allocation capability, ports contend for T-1 channels based on a priority scheme.

A defensive reaction

Analysts viewed the introduc-

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▶ *SERVICE PRICING*

AT&T files for Switched 56 increase

BY MICHAEL FAHEY
Senior Writer

WASHINGTON, D.C. — Claiming that its Accunet Switched 56 service is used as a backup by many of its subscribers, AT&T last week filed a request with the Federal Communications Commission seeking to increase the minimum charge for the service.

AT&T told the FCC that it is not recovering sufficient revenue to cover its fixed costs for providing the service because, according to its market research, about 50% of the service's access lines were purchased for dial backup or disaster recovery.

Those lines are only used to reestablish communications if private-line, point-to-point digital data lines fail, and the company claimed it receives little or no usage-sensitive revenue from it.

AT&T has proposed a $75 minimum per line monthly fee for Switched 56 special access customers. They use a dedicated local exchange carrier line to access the AT&T 56K bit/sec switched net.

> A $20 per month minimum usage charge will apply to each switched access line. If the actual usage charges for the calls on a switched access line are not at least $20, the customer will be billed the additional amount to reach the minimum.

If the actual monthly usage charges for the calls on a special access line are not at least $75, the customers will be billed the additional amount required to reach the minimum. The majority of Accunet Switched 56 customers are special access customers.

A small number of subscribers use switched access, a service not widely offered by the local operating companies. For these users, a $20 per month minimum usage charge will apply to each switched access line. If the actual monthly usage charges for the calls on a switched access line are not at least $20, the customer will be billed the additional amount to reach the minimum.

According to an AT&T spokesman, the carrier incurs a one-time $2,175 fixed cost to connect each

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▶ *386-BASED DEVICES*

PCs act as subs for servers

BY MARY PETROSKY
West Coast Correspondent

Due to the lack of local network servers based on the high-power Intel Corp. 80386 microprocessor, many users are trying to make do with 386-based personal computers configured as servers, a practice that some onlookers applaud and others decry.

One argument against using 386-based servers today is the lack of software that takes advantage of the processor's expanded memory, support for multitasking and 32-bit internal architecture.

Network users and consultants in favor of using 386 servers say these machines, when coupled with fast disk drives, provide performance gains worth their price.

Clouding the issue is the fact that vendors can now use at least two hardware platforms to build 386 servers: the IBM Personal Computer AT and the newly released IBM Personal System/2.

A number of 386-based file servers using the IBM AT architecture debuted at the recent Comdex show, including 386 AT-based

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▶ *DOJ RULING*

RBHC credit cards may favor AT&T; ads nixed

BY MICHAEL FAHEY
Senior Writer

WASHINGTON, D.C. — The Department of Justice has ordered the regional Bell holding companies to curtail the promotion of their telephone credit cards while it determines if the cards favor AT&T and thus violate the consent decree that broke up the Bell System.

According to Nancy Garrison, assistant chief of the communications and finance section in the Justice Department's Antitrust Division, the department notified the RBHCs in a letter dated June 5 that it is investigating their credit card operations and they must stop advertising the cards for inter-local access and transport area toll calls.

"The problem is you can use the BOC cards to charge calls on AT&T, but you can't use them if you want to use another interexchange carrier," Garrison said.

In addition to ceasing to advertise the cards for inter-LATA calling, the RBHCs must replace any card that bears the AT&T interna-

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TELECOM TRENDS

Communications managers are borrowing techniques from advertising to sell management on telecommunications services and technology. **Page 11.**

DATA DELIVERY/ NET MANAGEMENT

Westinghouse chooses start-up firm Netlink's SNA Hub to connect users to its IBM and Unisys mainframes. **Page 13.**

LOCAL NETWORKING

Norway's banks are installing fiber-optic local networks as part of a nationwide, long-term upgrade of banking networks. **Page 15.**

COMMUNICATIONS MANAGER

By the year 2000, telecommunications managers will have won the battle for supremacy over data processing chiefs, says industry guru Gideon Gartner. **Page 19.**

NEW PRODUCTS AND SERVICES

GE Fanuc Automation introduces interface and modem boards that enable its controllers to access carrier-band LANs. **Page 19.**

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▶ *NETWORK WORLD READER SURVEY*

LAN buyers seek reliability first

BY PAULA MUSICH
Senior Editor

Network World readers ranked reliability, performance, and service and support as the three most important considerations in their decisions to purchase local-area networks, according to a recent survey.

The survey, conducted by First Market Research in Boston, asked 200 subscribers about their network installations and plans. The survey also revealed that vendor viability, network expandability, multivendor connectivity and user-friendliness are important purchase considerations.

In ranking 15 factors that influence their decisions, the readers — 97% of whom are involved in the purchase of local networks — put ease of installation, number of users supported and price at the bottom of their priority lists.

Some 71% of those surveyed already had at least one local-area network installed, and the number of nets installed at each site averaged 2.3. Of these, 22% said IBM was their primary network vendor, followed by Digital Equipment Corp. with 17%, Novell, Inc. with 10% and 3Com Corp. with 8%.

IBM has overtaken DEC as a primary local networking vendor for these *Network World* readers, despite the fact that DEC's offering has been available much longer than IBM's Token-Ring Network. Survey results indicate, however, that IBM will not widen its lead in the next 12 months.

That is because the same pecking order emerged when users were asked about their plans to install local networks at a single site during the next 12 months. The breakdown was as follows: One or more IBM Token-Ring Networks will be installed at 22% of the readers' sites, DEC Ethernets at 18%, Novell NetWare-supported networks at 17% and 3Com Ethernets at 12%. Several of these readers said they will also be involved in the installation of networks at other sites within their companies.

Among *Network World* subscribers surveyed, the applications users are running over their local networks are not heavily concentrated in a single area. Some 10% are using networks for data base access, another 10% for general purpose applications, 9% for office automation and 6% for factory or manufacturing networks.

Microcomputer managers at large organizations have similar plans to install local nets from these four vendors in the next year, according to a recently completed study by International Data Corp.'s PC Group. Some 33% of those managers who plan to install local networks said they would go with IBM's Token-Ring Network, 25% with Novell NetWare-supported networks, 18% with DEC Ethernet and 12% with 3Com Ethernet.

In the IDC survey, of the 208 micro managers surveyed, 132, or 63%, indicated they will install local networks in the next 12 months. "I think that says the LAN issue is in the implementation stage now, rather than the 'let's talk about it stage,'" said Aaron Goldberg, IDC vice-president of microcomputer services.

The IDC study focused on determining how IBM's recent announcement of the Personal System/2 and Operating System/2 will affect the micro managers' purchase decisions. The managers indicated that the new IBM products will have no impact on their plans to purchase local nets.

Users rate factors influencing decisions to purchase local networks

	Of critical importance	Very important	Somewhat important	Not important
Reliability	38%	54%	7%	0%
Performance under heavy system traffic	24	47	25	3
Service and support	23	58	17	1
Vendor viability	22	47	24	1
Expandability	20	62	15	2
Multivendor connectivity	15	42	32	10
User friendliness	13	50	33	3

NOTE: These numbers are based on a survey of 200 *Network World* subscribers.

SOURCE: FIRST MARKET RESEARCH, BOSTON

▶ *NATIONAL COMPUTER CONFERENCE*

NTI boosts Lanstar PC

BY JIM BROWN
New Products Editor

CHICAGO — Northern Telecom, Inc. is expected to unveil a stand-alone verion of its Lanstar PC and unveil an agreement to resell Banyan Systems, Inc.'s file servers and local net operating system at the National Computer Conference here today.

Initially sold as an option for Northern Telecom's Meridian SL-1 private branch exchange, Northern Telecom is now positioning the Lanstar PC local net product as a stand-alone local net. The product can, however, still be linked to an SL-1 with T-1 facilities.

The heart of the star configured network is the Lanstar PC cabinet, which supports 16 port Lanlink assembly cards. These cards support twisted-pair wire connections at 2.5M bit/sec to personal computers outfitted with PC Lanlink interface boards. Distances supported range up to 2,000 ft.

Each Lanstar PC cabinet supports up to 336 personal computers, file servers and printers. Up to four cabinets can be linked together over a 40M bit/sec backplane bus to create a stand-alone network of up to 1,344 devices. Gateway connections between Lanstar PCs can also be established.

Enhancements to the stand-alone product include a new cabinet supporting 112 personal computers, compatibility with IBM's Network Basic I/O System and a Node Diagnostic Program, a self-diagnostic program that runs on the personal computer and monitors the interface board, the line to the cabinet and the Lanlink assembly card port assigned to the personal computer.

Northern will also resell the Banyan Network Server and Desktop Server, as well as Virtual Networking System (VINES) software with Lanstar PC. This move is significant because it will provide Lanstar PC users with an alternative to Microsoft Corp.'s Microsoft Network software, which has been difficult to work with, according to Northern Telecom and analysts.

Northern Telecom partially attributes slow Lanstar PC sales to the unwieldiness of MS-Net. Northern Telecom is hoping the addition of NETBIOS compatibility and the VINES operating software will spur interest in the product.

Ian Angus, president of Angus Telemanagement Group, Inc. of Toronto, said, "MS-Net has not exactly been the most successful operating system in modern history. Northern bet on the wrong horse when they went with it."

Henry Theloosen, Northern Telecom's general manager of Meridian packet transport equipment, says Lanstar PC is being positioned as a single network located in the computer or telecommunications room that will link personal computers across several departments.

He said using the Banyan file server's capability to support gateways between up to four different networks will allow connection between different departmental networks. Banyan's servers also support access to wide-area networks such as X.25 packet switching.

While the enhancements and the Banyan agreement are seen as technological aids to the Lanstar PC offering, analysts question Northern Telecom's ability to penetrate the local net market through

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NETWORK WORLD

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▶ *UNIQUE LEGISLATION*

Vermont OKs vast deregulation

Law lets Dept. of Public Service freeze basic N.E. Tel rates.

BY MICHAEL FAHEY
Senior Writer

MONTPELIER, Vt. — Vermont Governor Madeline Kunin signed legislation last week that permits sweeping deregulation of telephone service — the first legislation of its kind in the nation.

The Vermont law allows the Department of Public Service to negotiate a five-year agreement with New England Telephone Co. that is expected to freeze basic telephone service rates for 1987 and 1988 and impose a limit on basic local exchange service rates for the next three years.

In addition, New England Telephone's earnings would no longer be limited by the state to a percentage of its capital investment.

The Department of Public Service and New England Telephone are currently negotiating the particulars of the agreement, according to Louise McCarren, chairwoman of the Vermont Public Service Board, a state watchdog agency that oversees the Department of Public Service. The agreement is expected to deregulate most business phone service such as Centrex and private-line service. Intra-local access and transport area toll service is also likely to be deregulated.

The negotiations between the Department of Public Service and New England Telephone are subject to the approval of the Public Service Board.

"The people of Vermont will get a lot out of this agreement," said McCarren. "They are going to get rate stabilization and fixed, basic exchange rates that are very moderate. The state will be opened up to new technology by New England Telephone."

Another view

Page Montgomery, vice-president of Economics and Technology, Inc., a Boston-based consulting company, was not as sanguine, however, about the benefits that would result from deregulation.

Montgomery said New England Telephone's commitment to provide digital service and electronic switching in Vermont was something the company was likely to institute whether or not the state agreed to deregulation.

Moreover, Montgomery said, telephone company expenses are falling and, as a result, rates should be lowered, not capped. "You don't have to be any big-time expert to see that the carriers are laying off people or are reducing their work forces by attrition," Montgomery said. "New investment in digital switching and fiber optics is cheaper by unit, and in most telephone jurisdictions, business is booming."

He pointed out that last year, the state of New York imposed a five-year rate cap on New York Telephone Co. without reducing regulatory oversight.

New York instituted the cap because New York Telephone operating costs had been reduced as a result of federal tax reform and lower interest charges.

In addition, Montgomery said, New Jersey, Michigan, Connecticut and the state of Washington have ordered one-time local telephone rate cuts ranging from $48 million to $79 million because of the telephone companies' savings from tax reform and lower interest charges.

Montgomery said he believed that, because Vermont is a small rural state, the legislation was unlikely to have an effect on regulatory bodies in larger, more industrialized states.

But although the Vermont law has no direct effect on other state regulatory bodies, the Vermont legislation has been closely followed by industry observers.

Last year, the California Public Utility Commission (PUC) turned down a similar proposal from Pacific Bell that would have placed a cap on rates in return for less stringent regulation.

When it was proposed, Pacific Bell was involved in a separate, complicated rate case, and the state regulatory board advised the company to withdraw the proposal until the case was settled.

Mike Miller, director of State Regulatory Services for Pacific Bell, said the company may approach the PUC with a similar proposal in the future. Miller said he was encouraged by the Vermont legislation. "Any time you have regulators willing to give regulated companies more flexibility and freedom, it is a positive development," he said.

Both Miller and a spokesman for New England Telephone said deregulation would provide the telephone companies with more flexibility in pricing their services. In addition, both said deregulation would streamline the time-consuming and expensive rate-setting process.

▶ *ETHERNET-TO-ETHERNET*

CrossComm bridge out

BY PAULA MUSICH
Senior Editor

WEST BOYLSTON, Mass. — Networking start-up CrossComm Corp., a venture formed by Artel Communications Corp. founder Tad Witkowicz, is about to announce an Ethernet-to-Ethernet bridge, *Network World* has learned.

The 487EE LAN Bridge links Ethernet segments, extending Ethernet's distance limitation from 2.8 km up to 8.4 km. The bridge, which can improve a larger network's throughput by acting as a filter to keep traffic localized, is said to provide twice the throughput of competitive offerings.

The CrossComm bridge is capable of passing up to 9,000 packets per second in either direction, while other offerings operate at approximately 4,500 packets per second, according to the company.

Competing products include Bridge Communications, Inc.'s IB/2, which transfers 4,000 packets per second, and Ungermann-Bass, Inc.'s Net/One Ethernet Data Link Bridge, which can forward up to 6,000 packets per second, according to company spokesmen.

"Our product is quite popular, but it has been around for quite a while now," said Doug Tsui, Bridge Communications' product line manager for bridges and gateways. Tsui said that CrossComm has improved the technology, but there are other factors that buyers need to consider. "CrossComm is a start-up, and they will have to prove themselves in the market."

The speed advantage of the bridge is made possible by a proprietary algorithm capable of simultaneously listening to activity on each connected segment. If a message is destined for a node on a busy segment, rather than sending the source a busy signal, the bridge will store the information internally and send it to its destination when the segment is clear.

While such bridges are usually intended to ease bottlenecks in larger Ethernet networks by keeping traffic local to a given area, they have created other snarls because of their slower packet transfer. "The real bottleneck has been in the bridges between Ethernet segments," said Kim Myhre, vice-president of communications research at International Data Corp. in Framingham, Mass.

Although Myhre said there is little need for such bridges in general-purpose networks, he said technical applications may tax a network more severely. The product is targeted primarily toward networks linking technical workstations and minicomputers, according to Witkowicz.

CrossComm claims the $5,400 bridge is the lowest cost bridge with the highest performance. Bridge's IB/2 is priced at $10,000, and the Ungermann-Bass local Ethernet bridge costs $9,500.

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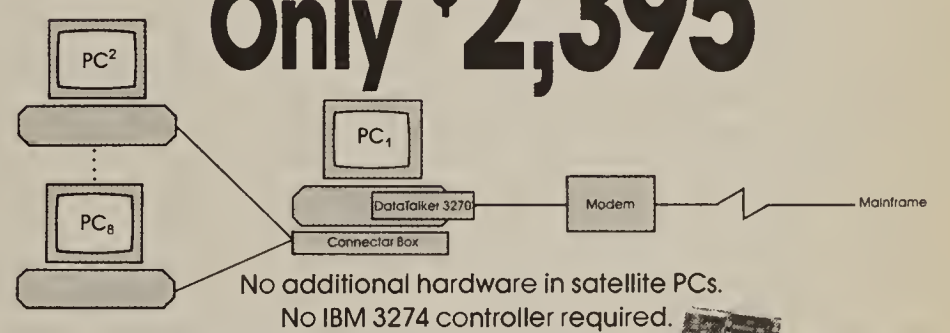

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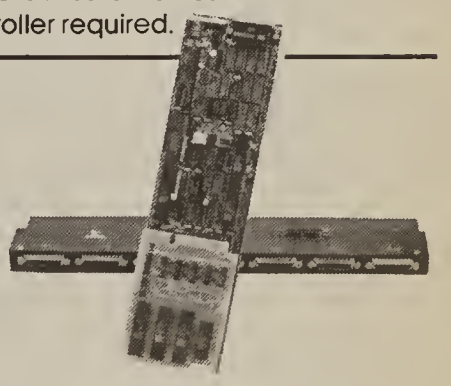

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▶ *NETWORK CONVERSION*

FTI links users to Burroughs with SNA

Protocol converter aids IBM migration.

BY JIM BROWN
New Products Editor

CHANTILLY, Va. — A data processing service bureau here is using protocol converters from Datagraf, Inc. to eliminate the need for one large client's employees to have two terminals on their desks during a migration from a Burroughs Corp. to an IBM environment.

Financial Technologies, Inc. (FTI), once the data processing department of the Pentagon Federal Credit Union, was spun off as a separate company in 1984. The newly created firm inherited the Burroughs system from the credit union, still one of its largest customers, but later installed IBM systems to support new customers.

Now FTI is migrating the credit union, a Washington, D.C.-based federally chartered credit union that serves 350,000 military personnel and civilian employees worldwide, to the new system as well. To smooth the transition, FTI is using customized versions of Datagraf's Bump protocol converter to allow terminal users to access Burroughs-resident data and applications, as well as direct Burroughs jobs to an IBM printer.

FTI's data center here houses an IBM 4381 running VM and an IBM 3090 Model 150 running MVS. Both are linked to IBM 3720 and 3725 front-end processors running VTAM. The firm's Alexandria, Va., data center is where the Burroughs 2930 system and its Burroughs CP 3680 front-end processor are located. The two facilities are linked via a T-1 line.

Slow going

Migrating Burroughs-resident data and applications to the IBM mainframes is a slow, arduous task, according to FTI President Frank Lesser. During the migration, users will need to access IBM systems for some applications and Burroughs for others.

"We've already been working on for it three years, and we probably have another three years to go," Lesser said. Files tracking savings accounts and other deposits will be off-loaded from the Burroughs system to the IBM system during the first week in July. Loan records will remain on the Burroughs system for at least the next two years.

To eliminate the need for credit union employees to use two terminals during the migration, FTI has been migrating to IBM terminals and used the Datagraf protocol converters to get back into the Burroughs environment. The IBM 3179 terminals FTI installed have the ability to toggle between IBM and Burroughs sessions displayed on the screen in multiple windows. "The client was very unhappy with the idea of having Burroughs terminals and IBM terminals in their branches," Lesser said. "We're also trying to migrate the client from their proprietary network to our dedicated line SNA-based network and public networks where we think it is more cost-effective."

According to Don Daley, FTI director of operations and special projects manager, the Datagraf products were purchased in 1985 in place of more powerful and more expensive customized front-end processors that would act as a gateway between the Burroughs system and the IBM system.

"The fact that we were not talking about another minicomputer coming into the network was a primary reason for going with the protocol converter," Daley said.

Pentagon Federal has 650 data terminal devices that need to access the Burroughs system and some 25 IBM cluster controllers supporting more than 800 terminals. That figure does not include the terminals used by other FTI clients, who access the IBM mainframes from dial-up lines.

Pentagon Federal's employees access the IBM host using leased lines that support Binary Synchronous Communications and operate at speeds from 9.6K bit/sec to 19.2K bit/sec. FTI uses Codex Corp. 2660 and 2680 modems to support transmission over those lines. Some other locations access the data center over Tymnet, Inc.'s X.25 public packet-switched net.

The IBM front-end processor will route requests for Burroughs resident data or applications to one of seven Datagraf protocol converters, which then converts the BSC protocol and 3270 data stream to the Burroughs Poll/Select protocol and Burroughs data stream. Once retrieved, the data or application is routed back through the network to the terminal.

Another pair of Datagraf protocol converters will allow Burroughs-generated print files to be routed back through the network and printed locally on IBM 4720 printers. That device converts the Burroughs Poll/Select to HASP, which drives the print services FTI supplies to Pentagon Federal.

Datagraf personnel helped Daley and FTI work out some initial snafus in prototype products. "We had a problem with it dropping the communications line and not being reliable, which meant it would have to be reset quite often. Their programmer found out what that problem was, and now they are very reliable," Daley said.

A similar problem occurring with the two Poll/Select-to-HASP protocol converters has yet to be corrected, according to Daley. Although the devices work well with print files of up to a few hundred characters, they will drop the communications line while processing very large print files.

"Once we start transmitting 5,000-line print files at 133 characters to a line, it gets to be a problem with the protocol converter and HASP talking to each other," Daley said. So, most users try to break up large print files into several smaller files for processing.

According to Lesser, another advantage of shifting away from Burroughs Poll/Select to Systems Network Architecture is the ability to manage the network more effectively with IBM's mainframe-resident NetView. As FTI prepares to implement NetView, Lesser said it will swap the Codex modems for IBM models.

"In a pure SNA environment, we found we had a lot more choices. We can choose the protocol and delivery vehicle that matches the client's needs," Lesser said. "We felt we could manage having the connection between the IBM and the Burroughs go through the Datagraf. And once the data goes out over our network, we could even manage that better with NetView."

The importance of protocol conversion to FTI's business cannot be overlooked, Lesser said.

"In our business, we never know what someone is going to bring to us and say, 'hook this into your network.' Things like the Datagraf let us connect devices that are not inherently compatible, while having a backbone network that is pure [IBM] blue," Lesser said.

▶ *HEWLETT-PACKARD*

NetDelivery aids application work

BY PAUL KORZENIOWSKI
Senior Editor

PALO ALTO, Calif. — Hewlett-Packard Co. is expected to move one step closer to delivering transparent distributed network application capabilities to its customers with the announcement this week of one new product and enhancements to a second.

HP's NetDelivery is a software program designed to help customers write distributed applications that run on HP's AdvanceNet networks. Currently, users are forced to write much of the networking software needed for such applications, according to Willem P. Roelandts, general manager of HP's Information Networks Group. Developing such software can be expensive and often creates software maintenance problems.

NetDelivery isolates applications from networking functions, a capability that cuts development time and makes it easier for customers to port applications to various processors and add new users to a network. Previously, users developing networking applications had to write code to use functions such as message delivery. With NetDelivery, users no longer have to write code. Instead, they can use a NetDelivery service.

The product's networking functions include an asynchronous store-and-forward capability that ensures a message or document will be delivered to a user. If a link is not available, the message will be stored on a disk and relayed to the receiver when the link is free. Customers can use that feature to develop applications that will transmit information when line rates are least expensive.

The network software provides a user with transparent access to data stored on other nodes and routes data to other users as long as the sender knows the name of the destination node.

The enhanced product, HP's System Dictionary/3000, provides a global network dictionary listing all data, files, applications, programs and users on a network. For example, the dictionary names all users working with a payroll application. It has been enhanced with a copy/merge facility so that one version of it can be merged with a second residing on another node in the network.

Roelandts admitted pieces are needed that will let users easily develop and manage distributed applications, saying HP plans to provide additional tools. Currently, users have to change all data dictionaries and data bases manually on an AdvanceNet network. Customers need a facility that would automatically update all the dictionaries and data bases.

David L. Terrie, editor of the newsletter "Patty Seybold's Network Monitor," said every vendor is working to enhance its distributed application capabilities. "The industry has progressed beyond the stage where customers were concerned with the type of wiring a local-area network used," he said. "Customers are concerned with items above the transport level, such as applications interfaces, presentation services, network management and administrative services."

Prices for NetDelivery range from $3,800 to $9,850. The System Dictionary/3000 is a piece of the operating software included with HP 3000 series minicomputers. The company has begun production shipments of both products.

▶ *INSURANCE INDUSTRY*

Data-format barrier falls

BY JOSH GONZE
Staff Writer

UPPER SADDLE RIVER, N.J. — Western Union Corp. unveiled a data service here last week that lets insurance companies communicate with sales agents who use an incompatible data-input format.

Using the new service, which Western Union has dubbed InsLink, insurance companies with proprietary data formats can talk to any sales agent without having to adapt their mainframes to the standard format used by most agents.

Western Union is running the new service on the company's nationwide, packet-switched network, which means users can take advantage of value-added services. Those services include access to telex subscribers, on-line data bases, communications with facsimile machines, a news service and the InfoMaster information retrieval service.

According to Western Union, the service is needed because independent insurance agents may deal with many insurance companies. While agents have been able to standardize the format they use for input of policy data, many insurance companies still use proprietary formats developed in the days of dumb terminal, real-time computing.

For such companies to accept data in the standardized format, they would have to install their own format-translation software, according to Matthew Lampell, Western Union's director of insurance industry marketing.

Agents will dial into Western Union's network using special identification numbers, as users of the company's EasyLink public electronic mail service do now. Lampell said there are enough nodes on the network that most agents' calls will be local, and that agents in areas without a node will be able to use an 800 number.

The agents will transmit policy data, such as requests for changes or new applications, using the format developed several years ago by the Agent Company Organization for Research and Development (ACORD).

> The estimated connection price is 50 cents a minute, about the time to transmit one policy application.

The data input will be processed at Western Union's EasyLink facility in Bridgeton, Mo., a St. Louis suburb. There, Western Union will handle the task of data format translation from ACORD to whatever format is used by the company to which the data is addressed.

Lampell explained that translating data formats can involve changing order and quality of the data field, changing protocol and "changing the communications methodology." Text messages can also be transmitted using the service. Since format translation is unnecessary for text, such messages would bypass the Bridgeton facility.

The type of line hooking the insurance companies' processors into the network will depend on the company's amount of traffic. Low-traffic customers will dial in and pick up as if they were clearing an electronic mailbox.

For medium traffic, Western Union will perform scheduled deliveries to a mainframe.

For heavy traffic, Western Union will establish a dedicated circuit between the network and the host.

The billing system uses the agent identification numbers to give InsLink's user companies a choice of picking up the tabs for their preferred agents or having bills sent to the agent sending data. Billing is measured by connect time, in six-second increments. Lampell estimated the price at 50 cents a minute, which is the approximate time necessary to transmit one policy application.

Lampell said Western Union is targeting the telecommunications business of the insurance industry because it is the largest user of such services outside the government and because the company's business plan calls for selling to insurance companies as one of three primary customers. Aerospace and banking are the other targeted industries.

PCs sub for servers

continued from page 2

servers announced by Asher Technologies, Inc. of Roswell, Ga., and Computer Classifieds, Inc., located in Miami.

Cloning conflict

It will take time for these and other manufacturers to clone the Personal System/2 because it has a different architecture based on a new bus structure known as the micro channel, according to J. Scott Haugdahl, senior systems specialist for Architecture Technology Corp. of Minneapolis.

Because the micro channel is technically advanced, it will be costlier and more difficult to build network interface and other add-on boards necessary to create a server.

Haugdahl said he believes network interfaces built for the micro channel will provide higher performance because they will be capable of moving data to and from network interface cards more quickly than boards built for IBM AT-type servers.

Despite the abundance of 386-based hardware on display at Comdex, only Banyan Systems, Inc. of Westboro, Mass., was showing networking software for these machines. Banyan demonstrated a prototype of its VINES/386 package on a Compaq Computer Corp. Deskpro 386.

VINES/386, which is based on Unix System V Release 3.0, improves on VINES/286 by providing full 32-bit implementation of the chip's instruction set, according to Anand Jagannathan, vice-president of business development with Banyan. "The impact on the user is better performance and reliability," Jagannathan said.

Unix System V Release 3.0 provides a memory management feature known as demand paging, as well as support for loadable drivers. This latter capability will enable Banyan to support more network interface cards, Jagannathan said.

Earlier versions of Unix had required the company to update its network operating system in order to support new network hardware.

Banyan expects to ship VINES/386 in November. Designed to run on a Compaq 386, it will be priced at $3,995.

Novell, Inc. currently supports 386-based machines with its Advanced NetWare 286. A version of NetWare for the 80386 is forthcoming, according to Craig Burton, vice-president of corporate marketing and development for the Provo, Utah-based company. However, Burton declined to state when it will be available. Novell will also be offering a 386-based server.

3Com Corp., having cast its lot with Microsoft Corp., will be upgrading its 3+ network operating system to support IBM's Operating System/2 (OS/2) and the LAN Manager, said Bob Bressler, vice-president and general manager of 3Com's Software Products Division. The Santa Clara, Calif.-based company also plans to upgrade its servers with a 386 chip by replacing the processor board, Bressler said.

Bressler would not indicate when 3Com plans to move to 80386-based servers. He did note, however, that once the 3Server supports OS/2, upgrading the server to a 386 processor should be relatively straightforward.

Both Burton and Bressler agree that the 80386 offers performance benefits. But performance is also dependent upon the speed of disk drives and the efficiency of the network interface boards. "A 32-bit architecture enables the system to go faster but doesn't guarantee it will," Bressler said.

The Seybold Group, Inc., based in San Jose, Calif., recently tested one vendor's unannounced 386-based server against a Novell 286B server. Both were running Advanced NetWare 286, according to Bob Clark, vice-president of marketing for Seybold's consulting division. "The 386 was marginally better, depending on the applications," he said.

Clark said he believes that Novell's 286B server, coupled with Advanced NetWare, is the fastest server on the market today. However, it is expensive, and the 386-based server provides an alternative solution.

In a test last winter, Martin Waterhouse, an analyst in Chevron Corp.'s Personal Computing Services Center, substituted a Compaq 386 for an IBM AT as a file server on a 3Com Etherent network. "There was a significant increase in performance. Everything worked two to three times faster," Waterhouse said.

"If you're starting from scratch, go for a 386," he recommended. "There's a lot of horsepower, and they're cheap. Nobody needs a micro channel or to worry about OS/2 because it's a year away."

Power blockage

Horsepower alone isn't a convincing argument for some network users. The inability to get at the power of the 386 is the key reason Kaiser Permanente Medical Care Program of Walnut Creek, Calif., will likely use 80286-based servers on the 18 to 23 local networks it plans to install by year end.

"There doesn't appear to be any software that takes advantage of the 386," said Bob Tuttle, manager of technology assessment and planning for the hospital services company.

Since Kaiser's new networks will have only three to five users each, Tuttle said he believes it would be more prudent to wait two years and then consider upgrading the servers to 386-based machines. "I'm probably going to need more disk capacity and memory at that time anyway," he said.

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INDUSTRY UPDATE

Tax burden to shift to high-tech firms

Arthur Young & Co., the New York accounting firm, says the recent tax changes mandated by Internal Revenue Service regulations issued March 30, 1987 will "substantially increase" the taxes payable by telecommunications and other high-technology companies, according to Steven Burrill, chairman of Arthur Young's High Technology Group. The Tax Reform Act, which shifted the burden away from the individual, will "unfortunately be an increased burden to technology businesses for the next several years," Burrill said.

SHAKEOUT

PBX giants aim at low-end mart

Top vendors offer stiff competition.

BY PAM POWERS
Senior Editor

Vendors struggling to carve a niche in the already overcrowded key system/hybrid telephone systems market are facing stiff new competition from the big name private branch exchange manufacturers, according to a recent Yankee Group Market Watch study.

In the past few months, the report notes, AT&T significantly enhanced its low-end System 25 PBX and has introduced several key/hybrid telephone systems. In addition, Northern Telecom, Inc. has introduced a full-featured PBX that supports as few as 32 lines. And Mitel, Inc. has expanded its offerings in the low-end arena.

These entrants may well accelerate the shakeout currently occurring in the key/hybrid systems market by drawing market share away from a number of smaller vendors, the report says. While that is bad news for some vendors, it bodes well for the user, who will see improvements in the products and services offered today.

The report assesses several problems in the key/hybrid market. Although industry estimates for line growth in the key/hybrid market range up to 10% annually for the next few years, the Yankee Group projects a far lower growth rate, due to the threat of low-end PBXs and other market factors. The analysis states, for instance, that a large number of vendors have struggled in vain to achieve leading market shares, and "me-too" products abound, making it more difficult for any one vendor to distinguish itself from the pack.

Additionally, vendors have provided less than satisfactory product support through resellers, whose service reportedly varies widely among products and regions.

Upgrades have also proven difficult, the report says, because a large number of products cannot be easily integrated with larger

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How the competition stacks up:

Private branch exchange line shipments
(In thousands)

Vendor	1986	1987	(Projected) 1991
AT&T	1,125	1,198	1,550
Northern Telecom, Inc.	840	894	1,152
Rolm Corp.	750	795	1,002
NEC Corp.	465	494	625
Mitel, Inc.	390	411	491
Siemens Communications Systems, Inc.	180	191	239
Fujitsu America, Inc.	95	100	114
GTE Corp.	102	107	118
Ericsson Information Systems, Inc.	80	84	92
Harris Corp.	72	75	83
Intecom, Inc.	65	68	79
Others	172	151	111
Total	4,336	4,568	5,656

SOURCE: THE YANKEE GROUP, BOSTON

INDUSTRY EYE
PAM POWERS

High-quality service key to user loyalty

The increasing importance of vendor service reputation has eclipsed the continuous scramble to implement new technology.

Technological advances have left a number of vendors playing catch-up, trying to squeeze more speed and functionality out of products that have fallen generations behind in a short time.

But despite that ceaseless scramble, it is invariably those vendors with impressive customer rosters and a name for service that top the market share charts, whether or not their products are based on the latest technology and sport the latest features.

Technology, after all, is progressing far more quickly than the need for its advances. Frequently, an older generation product, at least in the short term, will provide the capabilities users need.

Discussions with users frequently reveal frustration about the quality of service. Much less often do they complain about a product's performance. Parenthetically, that is why even startup companies with superior product lines often have trouble getting off the ground — users are skittish about companies that lack a service track record.

There is evidence that the vendor community perceives how critical service has become in users' decisions. Many recent announcements have trumpeted expanded support staffs, greater regional presence, user seminars and the like. Particularly in low-end commodity markets, vendors have been forced to distinguish themselves on the basis of service.

But clearly, there is ample room for improvement. In the near future, the function of users groups as forums for effective dialogue between users and vendors is likely to increase; however, users report that even these often fail to produce the desired changes. Apparently, there is still a dearth of companies that really listen to user concerns and problems and implement solutions in their product lines.

CONTRACT

Resell pact extended

AT&T sells Digital Microwave radios.

BY PAM POWERS
Senior Editor

SAN JOSE, Calif. — On the heels of a healthy fiscal year and its decision to go public, Digital Microwave Corp. last week announced the extension of a lucrative original private label agreement with AT&T.

The agreement, under which AT&T resells Digital Microwave's 18- and 23-GHz microwave radios to AT&T end users, has been extended until June 1990. In Digital Microwave's fiscal year 1986, AT&T's equipment purchases comprised 11% of its revenue.

AT&T first started reselling Digital Microwave equipment in 1985, and it has expanded the original contract twice since then.

AT&T a strong avenue

A Digital Microwave spokeswoman said, "AT&T is obviously a strong avenue for us because it has a large and effective sales force."

The spokeswoman said Digital Microwave sells a variety of short-haul — 15 miles and under — microwave transmission systems, through resale agreements, to international markets, and directly to business, military and telephone company customers.

One large telephone company, Mercury Communications in England, has purchased more than $20 million of microwave facilities since 1985 to connect its central office nodes with customer locations. Other common carrier customers include MCI Communications Corp. and US Sprint Communications Co.

Private network customers include Allstate Insurance Co., Centel Corp. and The Coca-Cola Co. The spokeswoman said the short-haul private networks are used primarily to provide voice and data transmission between buildings in a campus environment.

At the International Communications Association conference in New Orleans this past month, Digital Microwave announced its intent to go public.

The company also introduced at that time the Integrated Lightwave System, a short-haul fiber-optic transmission system. The spokeswoman said fiber optics is a "new direction to which we are committed."

Sharp increase in revenue

In its fiscal year ended March 31, 1987, Digital Microwave posted revenue of $20.3 million, a sharp increase over the year earlier's $6.8 million. Net income rose from a loss of $154,000 to a gain of $3.46 million.

BRIEFS

Novell, Inc. posted earnings of $4.53 million on revenue of $42.35 million for its second fiscal quarter. That represents a 66% increase in earnings, up from $2.74 million for the similar quarter last year, and a 106% increase in revenue, up from $20.57 million in the corresponding quarter of the previous year.

President and Chief Executive Officer Raymond Noorda praised the smooth integration of Santa Clara Systems, Inc., CXI, Inc. and Softcraft, Inc. into Novell, and said product demand remains strong. But he also warned that "such rapid sequential quarterly growth is not necessarily indicative of" future quarters.

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Fujitsu, Ltd. reported net income of $148.01 million on revenue of $12.26 billion for its fiscal year ended March 31, 1987. Net income dropped 44.5% from last year's $266.64 million. Revenue increased 5.8% from last year's $11.59 billion.

Fujitsu said sales of telecommunications systems rose by 6.3%, while sales of electronic components dipped 1.6% from the year earlier.

$

As part of its effort to focus its resources on information systems, space and defense as well as the automotive business, **TRW, Inc.** disbanded its electronic components group based in El Segundo, Calif.

The Information Networks Division will become part of TRW's Information Systems Group. Other divisions will be either regrouped under existing divisions or sold.

$

Tellabs, Inc. announced the extension of an existing contract with AT&T Business Markets Group, under which AT&T will resell Tellabs' high-speed T-1 networking systems.

The new agreement will include the Tellabs Crossnet product line of T-1 networking multiplexers, which AT&T will sell under the name 740 Acculink.

$

Stromberg-Carlson Corp. signed separate contracts totaling about $1.6 million with two independent West Texas telephone operating companies for the provision of Digital Central Ofiice and Remote Network Switches.

$

Amdahl Corp. announced the appointment of John C. Lewis to the position of chairman of the board and chief executive officer. Lewis has been president since 1977. E. Joseph Zemke, chief operating officer, was named president.

$

Infotron Systems Corp. last week announced an executive realignment aimed at strengthening the company's position in the high-speed networking market. Robert J. Bauer, formerly marketing vice-president, was appointed corporate development vice-president.

PBX giants aim at low-end mart

continued from page 9

switches, even from the same vendor.

The Yankee Group said it expects that the smaller PBX offerings from the big switch makers will be formidable contenders in the key/hybrid market because these products resolve many of the above problems.

The new switches are both cost-effective and easily upgradeable, according to the analysis. Large users with numerous remote small sites will benefit tremendously from fully functional smaller PBXs, which are easily integrated with compatible larger switches at central sites. The report says such users will be the primary revenue source for the new product lines. Smaller users will obviously benefit as well.

As on larger PBXs, data connections on small PBXs cost significantly more than voice connections.

Yankee expects that these larger vendors, in addition to providing better products, will provide users with more stability, responsiveness and reseller/user support than is now available from the key/hybrid manufacturers. AT&T, for instance, has plans to improve its relationships with resellers.

One caveat for users looking to buy now is that, as on larger PBXs, data connections on small PBXs cost significantly more than voice connections. The report says that that cost is dropping, but is not yet low enough to justify purchase of a small PBX for data alone.

Yankee expects that small PBX offerings from AT&T, Mitel, Rolm Corp. and Northern Telecom will in the next 12 to 18 months achieve significant penetration of the traditional hybrid/key systems market, at the expense of other vendors.

TELECOM TRENDS

Finances flow to N.E. Telephone network

New England Telephone invests, on average, more than $2 million per day in its telecommunications network, according to a circular mailed to customers. During the next two years, the company will spend more than $1.5 billion to add more fiber-optic cable, install new digital switches and otherwise modernize and maintain its five-state network.

Cost justifying a videoconference

Conventional meeting			Videoconference meeting		
Two engineers schedule a manufacturing staff meeting at their plant 870 miles away. They travel by car to the airport, where they board a plane for the two-hour trip. Upon arriving at their destination, they rent a car and drive for 30 minutes to the plant office. After lunch, they will spend two hours in meetings and then return as they arrived, by both rental car and air. They arrive back at their home office at exactly closing time.			Two engineers schedule a manufacturing staff meeting at their plant 870 miles away. The videoconference takes two hours.		
Task	**Value**	**Cost**	**Task**	**Value**	**Cost**
(1) Five hours travel	$31 per hour	$155	(4) Two-hour meeting	$31 per hour	$62
(2) Fixed travel costs	*	$240			
(3) Incidental costs	$10	$10	(5) Two-hour videoconference	$138 per hour	$276
(4) Two-hour meeting	$31 per hour	$62			
Total per person per meeting		$467	Total per person per meeting		$338
Total for two persons per meeting		$934	Total for two persons per meeting		$676
Notes (1) Salary: 60K per year ($31.00 per hour) Travel time: five salary hours round-trip (2) Flight cost: *$200 (average) round-trip Car rental: $40 (3) Incidental costs: $10 lunch (4) Meeting time: salary cost ($31 per hour)			**Notes** (4) Salary: 60K per year ($31 per hour) (5) Videoconference transmission per hour: $100 per hour per person Equipment cost: $38 per hour per person Capital cost amortized** over five years based on a usage of four hours per day. **Includes accepted depreciation standards.		

SOURCE: COMPRESSION LABS, INC., SAN JOSE, CALIF.

PBX CONTRACTS

AT&T wins $1.4m deal

Missouri bank to build statewide ETN.

BY JOSH GONZE
Staff Writer

CLAYTON, Mo. — The Commerce Bank of St. Louis recently signed a $1.4 million contract with AT&T for private branch exchange and other network gear to be used to construct a statewide Electronic Tandem Network (ETN).

The contract includes four System 75s, an upgrade for an existing System 85, 12 remote switch modules for the System 85, ETN software and 24 channel service units.

The switch upgrade will make one System 85 compatible with specifications for Integrated Services Digital Network, a feature the bank hopes to take advantage of when ISDN services become available, according to Richard C. Brewer, manager of voice and data communications at the bank's parent company, Commerce Bancshares, Inc.

When Phase 1 of the project is completed in the third quarter of this year, the ETN will link Commerce Bank employees and customers in three distant Missouri cities.

Two AT&T System 85 PBXs, one located here, just outside St. Louis on Missouri's eastern border, and the other in Kansas City, Mo., in the western part of the state, are already linked by a T-1 circuit leased from LDX Net, Inc. When the ETN is fully implemented, these switches will act as route selectors for calls between St. Louis, Kansas City and Springfield, Mo., the site of a Northern Telecom, Inc. SL-1, Brewer said.

The Clayton System 85 is the hub of a star-shaped regional network that links about 30 Commerce Bank processing facilities in the St. Louis area. Conventional tie lines and T-1 circuits leased from Southwestern Bell Telephone Co. link the hub with PBXs and remote switching modules at those 30 facilities.

The new System 75s and remote switch modules will be installed at some of the 30 St. Louis-area facilities in the first quarter of 1988. The channel service units included in the contract will be used to interface the remote switch modules with T-1 facilities.

Explaining the basis of the ETN plan, Brewer said a tandem PBX network could answer senior management's demand for a statewide system providing higher quality and more accessible voice and data capabilities. Brewer said he expects the network to strengthen customers' ability to access bank employees and services, and to vastly improve intracompany voice communications.

To accommodate the additional traffic, the System 85 upgrade will raise the maximum number of lines at the hub from 450 to 1,500 and require installation of a new box,

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TELECOM TACTICS

Fliers, novelties help sell projects

Management education yields success.

BY BOB WALLACE
Senior Editor

BRIDGEPORT, Conn. — Coffee cups, glitzy brochures and one-on-one tutoring sessions are but a few of the means Rosalie Frazier uses to improve corporate visibility of the company's telecommunications department and to sell projects to General Electric Co.'s upper management.

"You have to sell the sizzle, not the steak," said Frazier, who was an account executive for AT&T before joining the $35.2 billion GE.

Frazier, who holds a degree in marketing, suggested that communications managers can get ahead by explaining the strategic advantages a certain product or service will provide the corporation. "What you have to do is sell the benefits, not the features," Frazier explained.

Teaching upper-level managers basic communications concepts also helps them understand how telecommunications can be used to help the company conquer new product markets, strengthen relationships with its business partners and improve customer service, Frazier said.

"By working with upper management, the communications manager also improves the credibility of the telecommunications department as a business department," Frazier said.

Increasing the awareness of telecommunications has enabled Frazier to put her marketing and sales skills to work. She serves as the department's public relations head, director of its own newsletter and distributor of promotional

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CROSS TALK
BRUCE HOARD

Big guys must also play the standards game

IBM and Digital Equipment Corp. don't seem like two companies that need to be making a lot of changes.

Given their enviable positions of power, why would these two monoliths go out of their way to accommodate and incorporate standards? Why should they worry about emulating something new when all of their competitors are trying to emulate them? What's in it for John Akers and Ken Olsen, the respective presidents of IBM and DEC?

Not much in the near future, it would appear. But over the next 10 years, things are going to change. Real standards will be developed and promulgated, bringing an incredible amount of pressure to bear on IBM and DEC. If they don't conform to the new order, they might get shoved in the background by those who do. Users will drive the process.

The most significant of the new standards will likely come in the form of the International Standards Organization's (ISO) Open Systems Interconnect (OSI) model.

The most notable example of real world OSI use is the implementation of electronic messaging products based on the X.400 protocol, which conforms to the highest layer of the OSI model. IBM has demonstrated its X.400 capability, but it has not yet unveiled any X.400 products. DEC has signaled its intention to participate in an X.400 demonstration at the Telecom '87 trade fair this October in Geneva, Switzerland.

Unfortunately for users, X.400 is the exception to the rule when it comes to OSI implementation. If they wish, IBM and DEC can hide behind a proprietary smoke screen for years to come.

DEC maintains that it is working toward openness. Ol-

See page 12

Big guys must play the game

continued from page 11

sen swears on his compatibility bible that his company will base its products on the most commonly accepted standards, as they become available. To use his analogy, DEC will produce railway cars that fit on the same train tracks as everybody else's railway cars.

But Olsen isn't just talking about a simple caboose. To stretch the analogy, he's talking about building a high-powered locomotive with so many bells and whistles, no ordinary engineer will be able to start the engine, let alone drive it.

Olsen bases his thinking on a business imperative: If you're going to spend millions of dollars developing the software that gives life to your products, you've got to make that money back through the sale of the products. If your products are easily copied and reproduced by the competition or if they aren't different enough to begin with, you don't make any money.

It is interesting to hear Olsen discuss IBM and its Systems Network Architecture. He does so with mild contempt and a wry smile. It pleases him to portray IBM as a standards renegade and SNA as its six shooter.

For its part, IBM holds up its participation in ISO activities as a shield against charges that it will stand by SNA to the exclusion of OSI.

When he was president of IBM's Communication Products Division, Terry Lautenbach, now IBM vice-president and group executive for the Information Systems and Communication Group, appointed his eventual successor in that job, Ellen Hancock, as IBM's main contact with outside standards organizations.

Unfortunately, unlike Olsen, Lautenbach is unwilling to render a candid opinion about his competitor's compatibility plans. He could probably puncture DEC's balloon with some enjoyment if he would.

What it boils down to is this: Neither company needs to change; they only need adapt. And this they will do at their own pace.

Fliers, novelties help sell projects

continued from page 11

items bearing the department's name and its latest project.

"We are trying to make people understand that we are no longer a back-room organization," Frazier said. "We want the department to be recognized as a part of the company's day-to-day business.

"You just can't sit back in the telecommunications office and expect the rest of the company to come to you," she said. "You have to get out and market these services to other departments."

Frazier was instrumental in the development of what she terms "glitzy brochures" touting the company's voice mail and teleconferencing systems.

Before installing any new communications service, Frazier surveys prospective end users throughout the corporation to determine if the services meet their needs.

The results of these surveys paint a vivid picture of which capabilities users need and which will likely not be used.

Frazier said the group also polls end users after equipment and services are operational to determine their strengths and weaknesses.

Most recently, GE's telecommunications group enlisted the aid of Arthur D. Little, a management consulting firm, to perform a 15,000-end-user postcard survey that asked for comments on the use of the company's communications facilities.

Frazier recommends that telecommunications staffers make contact with key members of other departments within the company — people who can be called on for valuable input on a specific project or to help lobby within their work groups for support of an undertaking.

AT&T wins $1.4m deal

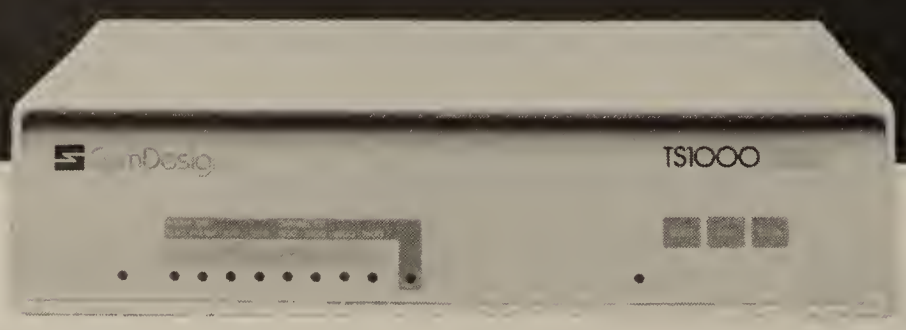
continued from page 11

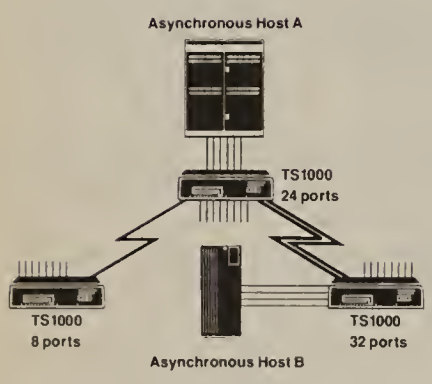
Brewer said. The T-1 line used to support long-distance transmissions between Kansas City and St. Louis provides eight voice channels and a data channel, and is manually configured, meaning it can be utilized only by users who are situated at one of the two System 85 nodes. With the ETN upgrade, users will be able to access the T-1 circuit from a remote node.

Brewer said the company will chose a long-distance carrier after evaluating the effect of the ETN upgrade. Commerce Bank currently uses AT&T WATS services.

The bank did not put out a request for proposal on the project. Since Brewer knew beforehand that he wanted to use AT&T's ETN software, he asked AT&T for a voice needs evaluation that simply assumed construction of an ETN. Brewer hired consultant Peat Marwick Main & Co. to check the AT&T study. With Marwick's recommendation, he accepted the AT&T bid.

How a smart mux can make *you* look smart.





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You'll find that one of the two TS1000 versions can perfectly match your specific requirements.

The TS1000 *single link* version functions as a conventional switching stat mux in point-to-point configurations, supporting 4 to 32 channels and a single composite link. It can also serve as a low-cost end node in larger private data networks.

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The TS1000 ensures end-to-end integrity with error correction and automatic rerouting in the event of line failure.

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DATA DELIVERY/ NET MANAGEMENT

"A lot of big companies right now want to hold back from making purchase decisions to expand their networks. They would rather wait for the important players to shake out. Even in light of budget cutbacks, communications managers can't let that happen. They have to sell their companies on the benefits of new technology.

Donald E. Carlson
Manager of telecommunications
Minnesota Power & Light Co.
Duluth, Minn.

IBM-UNISYS GAP

Westinghouse turns to Netlink

Picks start-up's hub to tie mainframes.

BY PAUL KORZENIOWSKI
Senior Editor

BALTIMORE — Faced with the problem of linking users to two types of mainframes, Westinghouse Corp. turned to a start-up company, rather than either of the mainframe vendors, for a solution.

Westinghouse beta tested and then installed Raleigh, N.C.-based Netlink, Inc.'s SNA Hub to enable users to access both IBM and Unisys Corp. mainframes. "Users from one group needed data from both hosts but did not want to place two terminals on their desks," noted Steve Coppel, communications analyst at the firm.

SNA Hub, which was announced in January, supports 15 communications lines, which can each transmit data at speeds up to 64K bit/sec. The device appears to the IBM host as an IBM PU 2 (like a terminal controller), and supports up to 255 host sessions. It also looks like a controller to the Unisys box. The product includes a multiple host routing feature, which enables users to link up with a number of different hosts.

Westinghouse had worked with other products from Netlink, including the company's SNA protocol converter, SNA Gate, and learned about SNA Hub from a local dealer. "We really couldn't find many products like SNA Hub," Coppel said. Most available products enable users to move from Unisys to IBM, he said, but were not as flexible when IBM users wanted access to Unisys machines.

The company did find one device that mimicked an IBM 3274 and provided asynchronous capabilities, but it did not function as advertised.

The decision to test Netlink's product was a no-lose situation. If the beta test was successful, Westinghouse would not have to pay for the product. If not, it would simply be returned to the manufacturer.

Westinghouse received its SNA Hub in March and had the product up and running in two or three days. "The installation was relatively straightforward," Coppel said. SNA Hub includes a microcomputer-based program that walks a user through the steps needed to configure the product and the network.

Since Westinghouse was beta testing the product, Netlink technicians journeyed to Baltimore and helped the customer install necessary IBM host software, including Job Control Language, run streams and account numbers.

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OPEN COMMUNICATIONS

PC-DISOSS software debuts

BY PAUL KORZENIOWSKI
Senior Editor

NEW YORK — Open Communications, Inc. announced a software program earlier this month that enables IBM Personal Computer users to access documents stored on an IBM mainframe by DISOSS, IBM's electronic mail and library services product.

Diamond uses windows to prompt a user for information needed to transfer a document to DISOSS. The software packages microcomputer data in Document Interchange Architecture format and transforms a microcomputer into a DISOSS Source/Recipient node so it can exchange documents with a host.

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DATA DIALOGUE
BY PAUL KORZENIOWSKI

The T-1 mux battle of wits

Battle lines are being drawn between T-1 multiplexer manufacturers who want to put routing and management smarts in their own boxes and those who wish to tap the intelligence of the public network.

Companies such as Network Equipment Technologies, Inc. (NET), Digital Communications Associates, Inc. (DCA) and Timeplex, Inc. produce devices that enable customers to design and control private networks.

This approach seems to be gaining widespread customer acceptance. NET's revenue jumped 450% in the company's fiscal year, which ended in March. Timeplex has strung together a series of impressive revenue quarters, and DCA has recently begun making sales to a number of large accounts.

Part of this success has stemmed from large users trading in their networks using intelligence in public networks for private networks. Merrill Lynch & Co., Inc., a first user of AT&T's T-1 Customer Control Reconfiguration (CCR) service, plans to replace the service with a private network controlled by multiplexers from either NET or DCA.

In the other camp are vendors such as Granger Associates, Integrated Telecom Corp., Avanti Communications Corp. and Aydin Monitor Systems Division, who are betting that users will prefer products that can work in conjunction with intelligence built into public network services.

These vendors think companies will not want to build and staff a network control center and would prefer to offload network management responsibilities to a carrier. By complying with telephone company standards, these multiplexer vendors enable customers to take advantage of carrier services — which promise advanced networking functions — without requiring a large up-front investment.

> Currently, it takes CCR customers five to 30 minutes to change their network configuration, an alteration that may be made in seconds through advanced multiplexers.

Although the strategy makes sense on paper, carrier services are not as robust as advanced multiplexing equipment. Currently, it takes CCR customers five to 30 minutes to change their network configuration, an alteration that may be made in seconds through some advanced multiplexers.

AT&T said it plans to improve CCR

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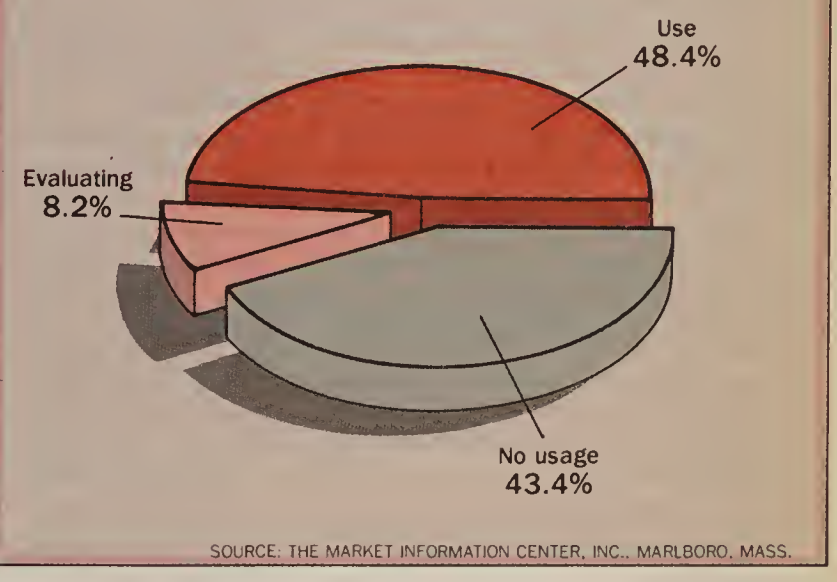
User plans for network management systems



SOURCE: THE MARKET INFORMATION CENTER, INC., MARLBORO, MASS.

IBM INSIGHTS

Which way to wire? IBM has received only a smidgen of interest from customers who would rather use telephone-type twisted-pair wiring than coaxial cable to connect their terminals to IBM cluster controllers. Ed Scharmer, IBM's product manager for display controllers, said twisted pair is being used with only 5% of the new controllers installed. Scharmer expects the percentage to grow at the expense of coaxial cable but does not foresee a large shift away from coaxial. He said the main competition to twisted-pair wiring growth is the IBM Cabling System, which is being chosen by 20% to 40% of new 3174 controller installations.

ASCII's coming. Scharmer added that many users are interested in ASCII protocol-conversion capabilities that will be available on 3174 controller models shipped later this year. He said the features appeal to companies with more than six ASCII terminals.

PC-DISOSS software debuts

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Users can work with either final form documents, which can only be viewed on a terminal or printed, or revisable documents, which can be edited by the recipient. The product also supports DISOSS library services, which enable users to store documents on a mainframe and search by items, such as key phrase.

The microcomputer software must be used in conjunction with with IBM LU 6.2 communications software, such as IBM's Advanced Program-to-Program Communications/PC, or an IBM 3270 emulation package, such as Digital Communications Associates, Inc.'s Irma line of communications programs.

According Bill Hartis, president of Open Communications, the 3270 emulation capability is required by users who have not yet migrated to LU 6.2 applications.

Script facility

Diamond's Script facility enables users to write batch file programs that will automatically transmit data to DISOSS.

The Script facility also includes an Application Program Interface that enables users to link the product to other software programs.

Pricing

Diamond is currently available and sells for $245.

The T-1 mux battle of wits

continued from page 13

response time. In addition, the company has hinted that it will offer a number of other services, including subrate multiplexing, which would make their offerings more attractive.

Cat fight predicted

Analysts say the services are a high priority at AT&T, and many predict a cat fight will arise between providers of equipment intended for use in private networks and those that take advantage of intelligence in the public network.

But unless the carriers can add the services quickly, the fight may never take place. Medium-sized and large corporations are already installing multiplexers that perform functions the carriers are trying to build into their networks.

Since, for the most part, users upgrade rather than replace their networks, it will be difficult for vendors selling multiplexers designed to interact with advanced carrier services to make inroads into this base.

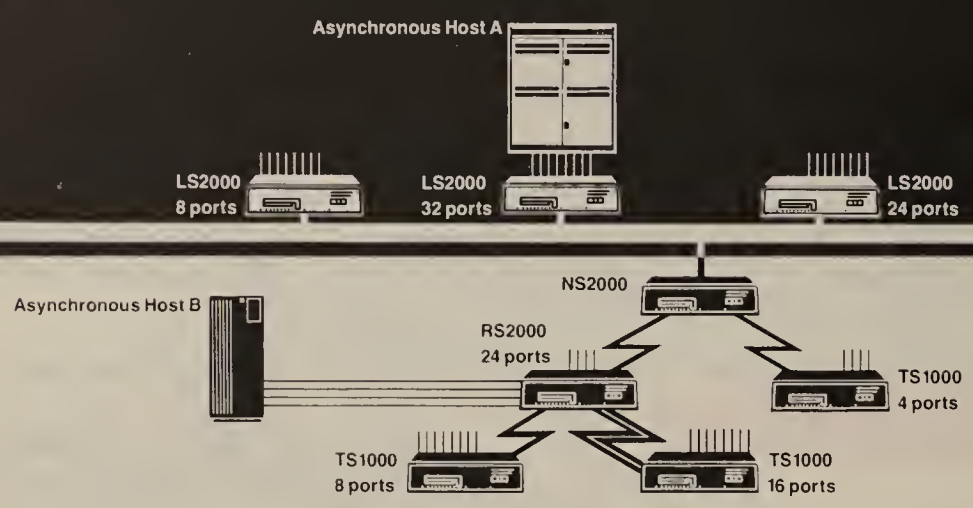
Another challenge

These multiplexer vendors also face another challenge: Manufacturers of advanced, proprietary T-1 multiplexers are widening their product lines and beginning to cater to smaller accounts, to the small and medium-sized companies that typically could not afford the expensive network multiplexers.

Recently, NET announced its first product aimed at this market, the IDNX 20, and earlier this year, DCA revamped its line to be more attractive to such companies. These two companies may start taking away sales from public multiplexer vendors.

Analysts claim there are too many vendors in the T-1 market and predict a market shakeout, a condition the vendors of proprietary multiplexers seem better situated to survive.

Ready to step up from mux to NETWORK?



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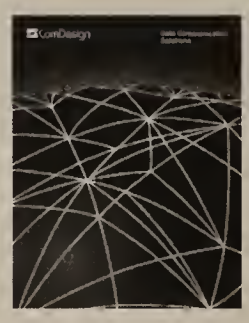

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Westinghouse turns to Netlink

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Westinghouse users were connected to SNA Hub through ports from IBM 3274 controllers and compatible devices. SNA Hub connects to the two hosts by 9.6K or 19.2K bit/sec lines. A noteworthy feature was that SNA Hub supports 15 communications lines, compared with the single line provided by most protocol converters.

SNA Hub has functioned smoothly since installation, and the only problem encountered stemmed from gateway software running on the Unisys host. "We found some SNA violations from the Unisys emulation program that we were able to fix," Coppel said.

Plans for expansion

Westinghouse plans to expand its use of the SNA Hub from the 50 workers currently attached to the device. "We plan to add to the device a security group that needs access to applications running on a Tandem Computer," Coppel said. The second group of users should be on the system by the end of next month.

Coppel would like to see one item added to SNA Hub: a hot key feature so users can switch between concurrent sessions. "The company will have to add more memory to the device to support concurrent sessions," he said.

Although Netlink is a start-up company, which might be a concern to many large customers, "the only item we were concerned about was whether or not the product functioned," Coppel concluded. "So far, we've been happy with SNA Hub."

LOCAL NETWORKING

Metcalfe dispels merger rumor

It is no secret that 3Com Corp. founder Bob Metcalfe has a penchant for mergers and acquisitions, although the right partner has yet to come along after at least three failed attempts at a union. Asked about rumored merger talks with Microsoft Corp., Metcalfe replied, "That would be like the mating of black widow spiders. Before we get devoured, we want to have a little fun."

LANMARKS
ERIC KILLORIN

The official translation guide to misused local-area network terms

What it says:	What it means:
Open Systems Internconnect-compatible	A member of the Corporation for Open Systems
$650 per connection	Cabling, transceivers, software and installation are $1,200 extra
Disk server	Not a file server
File server	A disk server unless you're Novell, Inc., 3Com Corp. or a few others
Multivendor support	Dumb terminal emulation
10M bit/sec speed	At 3% capacity
Data on twisted pair	But not twisted pairs
Voice/data integration	Cable sharing
Token-Ring support forthcoming	Negotiating with Olof Soderblom
File transfer	Federal Express Corp.
Local-area networking	The safest business to be in
Wide-area networking	Local-area networking with an X.25 packet assembler/disassembler
Departmental networking	Local-area networking with a multiuser system
Work-group networking	Local-area networking with an A/B switch
More growth in local-area networks	More publications on the subject

SOURCE: HYATT RESEARCH CORP., ANDOVER, MASS.

Looking for a legitimate local net lexicon

This column continues a tutorial discussion of local networks that began with a look at network speed and the factors affecting speed in "Configuring out bottlenecks," which appeared in the June 1 issue of Network World. *This week, network servers are examined.*

Local-area network terms and definitions are clouded by misunderstanding and misinformation.

Local-area network servers are also subject to creative definition, especially in how they function on a local network. There are storage servers, print servers, gateway servers and many others. Storage servers are perhaps the most important element of a local net since they can be set up to perform many of the functions of application-unique servers.

Storage servers can be grouped into two categories: file servers and disk servers. A file server is a shared secondary storage processor with software that allows network users to store and retrieve information at the file level.

A disk server also provides shared storage, but its software is limited to information access at the volume level. This is analogous to accessing a diskette on a personal computer as Drive A or a sector on a disk as Volume 1. The key to each is its software.

A file server's software is often tied in with the CPU's operating system, such as with NetWare in the case of Novell, Inc. File servers offer more flexibility to users since a large volume of data need not be downline loaded to a personal computer in order to retrieve the desired file. File servers are indispensable for networks of diskless personal computers.

A variety of other networking terms are subject to the vagaries of individual definition and the resulting confusion. To clear matters up a bit, "The Official Translation Guide to Misused Local-Area Network Terms" was developed (see chart). This is social engineering at its finest. Use this chart to dominate conversations at industry conventions, cocktail parties and meetings.

Killorin is the publisher of "Netline," an industry newsletter on computer networks, a publication of Hyatt Research Corp. in Andover, Mass.

FIBER OPTICS

Future is fiber for Norway bank net

Forty-five banks look to fiber Ethernets.

BY PAULA MUSICH
Senior Editor

Sparebanken Vestfold, Norway's fifth largest savings bank, saw the future of its banking system in tiny strands of glass, rather than in a crystal ball.

This bank is one of 45 banks installing fiber-optic Ethernet networks in a project that is intended to support bank computing needs through the year 2000, a project being led by a large on-line transaction processing service house.

Sparebanken Vestfold is currently installing fiber-optic links between computer systems at three branches in the town of Toemsberg, some 70 miles south of Oslo, and hopes eventually to link most of its 13 branches using fiber, according to Rune Mikkelsen, a network engineer overseeing the installation of the network.

The bank's fiber network, Whispernet, provided by FiberCom, Inc. in Roanoke, Va., will link NCR Corp. Tower XT minicomputers, NCR Worksaver master workstations and intelligent terminals as part of a project that began in 1983 to update the bank's aging computer system.

"What we're hoping for is that, in 1988, we will have a computer system that will take us into the year 2000," Mikkelsen said. By then, the bank also hopes to replace all dumb terminals at its main bank and 13 branches with intelligent NCR terminals.

The Sparebanken Vestfold network upgrade is part of a larger effort to update computing systems in some 200 Norwegian banks. This effort is being spearheaded by Fellesdata, one of the largest on-line transaction processing service houses in Norway.

Fellesdata, or computer central, is the "big brother of on-line transaction processing in Norway" for banks, gas stations and retailers using point-of-sale terminals, according to Liz Hookway, programmer/analyst at NCR's International Software Services division. Fellesdata, which chose to use the NCR and FiberCom equipment for the project, also provides a variety of software, data communications and data processing services.

"Savings banks in Norway just have dumb terminals linked via leased lines to computer central — Fellesdata — in Oslo," Mikkelsen said. Fellesdata's IBM mainframes process and store the banks' customer account information.

"All our data, our customer histories, are stored there. They make all our account reports, all our statements, everything; and they mail it out to every customer. There are at least 200 savings banks linked to computer central, and each one has at least three lines. That is very, very expensive," he said.

To lower transmission costs to Fellesdata, the banks are replacing the leased lines and moving to public data network facilities.

The Tower XTs will initially act as a Systems Network Architecture X.25 gateway and provide local file-serving capabilities. But when Sparebanken Vestfold completes

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WORK FORCE CUT

Sytek trims staff 14%

BY PAULA MUSICH
Senior Editor

MOUNTAIN VIEW, Calif. — Broadband networking vendor Sytek, Inc. recently cut its work force by 14%, citing a need to streamline its operations and reorient the firm toward its end-user customers.

According to a source close to the firm, at least four high-level executives were asked to leave as a part of the layoff. They included Roger Ferguson, chief financial officer; Joseph Siedler, vice-president of marketing; William Steele, director of international sales; and David Spaulding, vice-president of engineering. "There were far too many executives at Sytek for a company of its size," the source said.

A company spokesman said the layoff is a part of a recent restructuring that de-emphasizes the firm's OEM business. "Sytek's real core market has always been end

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NETWORK NOTES

Corvus Systems, Inc. recently named Lewis Lipton, current president of the local networking company, to the post of chief executive officer. Lipton has served as acting CEO since the May 12 resignation of James Siehl, who stepped down after an automobile accident left his wife seriously injured. Corvus also announced the election of Roger Mosher as chairman of the company's board of directors. Mosher has been on the board since August 1985.

Gateway Communications, Inc. of Irvine, Calif., reduced the price of its G/Net network adapter card by 25%, dropping the cost from $525 to $395. The adapter, called the Local Network Interface Module, features an on-board coprocessor with 64K bytes of random-access memory.

Univation of Milpitas, Calif., has introduced Lifelink NC515U, an Ethernet interface card retailing for $399. Lifelink NC515U can be used with Univation's Lifenet network operating system, Novell, Inc.'s Advanced NetWare and all IBM Personal Computer XT- and AT-compatible computers. The card features an Intel Corp. 82586 local-area network coprocessor chip, dual-port memory and 16K bytes of on-board buffering.

Univation also announced a joint marketing agreement with Raima Corp. of Bellevue, Wash. The two companies will market Raima's DB Vista data base management systems and Univation's Lifenet local network operating system.

Server Technology announced a version of its EasyLAN networking software that allows IBM Personal Computers and compatibles with different-sized disk drives to communicate.

Laptops and the IBM PS/2 with a 3½-in. drive as well as 5¼-in. disk drive-based micros are supported by EasyLAN 2.5. The packet-switched communications program provides bi-directional file and program transfer as well as printer-sharing capabilities. Files and programs can be transferred between personal computers with different disk formats via direct serial port-to-port connections, across telephone lines or through digital PBX systems at speeds up to 56K bit/sec.

While Version 2.5 has the file and printer-sharing features of earlier EasyLAN versions, it does not support Network Basic I/O System. The 2.5 version of the software-based local network can be used to read, delete and rename files on connected systems, and it supports messaging. File access and password protection are provided.

The $199.95 program is packaged as a two-system kit. It is currently available.

Sytek layoff

continued from page 15

users," he said. "Despite the work we did for IBM, we never intended to be an OEM supplier." Sytek developed the PC Network for IBM, its biggest customer, before the contract was canceled more than a year ago.

The layoffs should not affect Sytek's plans to introduce new networking products later this summer, the spokesman said. In a prepared statement, Sytek's president, L. George Klaus, said these products "will significantly enhance and augment Sytek's current offerings, as well as expand our product lines into new media and protocols."

Roughly 60 employees were laid off in this round of cuts, the third since June 1986.

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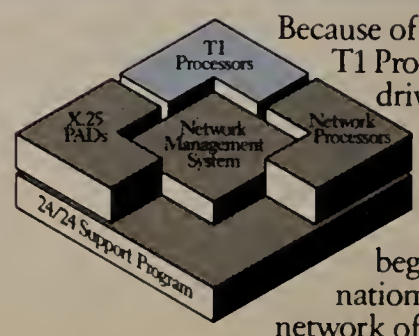
DCA's System 9000.



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Future is fiber

continued from page 15

the system project in about seven months, the Tower XTs, running a specialized Transaction Management Executive operating system, will off-load account processing and customer transactions from Fellesdata, Mikkelsen said.

The Whispernet used to link the three Vestfold branches in Toemsberg supports 10 transceivers in each branch. "Each transceiver serves one master terminal, which is used to support a number of slave terminals," Mikkelsen said.

The slaves, dumb terminals supported with cluster RS-422 cables, share the memory and disk of the master stations, which serve as terminal servers. The Tower XT in Mikkelsen's system links 40 terminals in each branch.

Each branch also has "cash points," or automated teller machines, connected to a special port on the Tower over existing coaxial cable.

"From the Tower XT, we communicate into Fellesdata in Oslo for customer account information," Mikkelsen said. "By using all the SNA X.25 gateways available through the Towers, if there is a problem with a Tower XT here in my office, I can go through the Whispernet into the next building and use the gateway on that Tower XT into Fellesdata. That's a big advantage."

Initially, Fellesdata only offered banks participating in the project the option of using coaxial cable Ethernets. Fellesdata eventually added FiberCom's Whispernet as an option because of the security advantages optical fiber provides and because of FiberCom's competitive pricing.

Sparebanken Vestfold chose fiber-optic cabling because it determined fiber was easier to work with and because of its immunity to "outside interference," Mikkelsen said.

"If you put in a coaxial cable, you would have a lot of signals from electrical cabling and other data cabling disturbing the data signals," said Mikkelsen, who is responsible for overseeing the network's installation. "With fiber, that isn't a problem."

Mikkelsen maintained that the fiber-optic cabling is no more sensitive to breakage than other kinds of data cabling. "We have been handling fiber-optic cable as if it was ordinary cable," he said. "So far we've had only one problem [with defective cable]. After we found the error, we had no other problems."

Mikkelsen's bank was lucky to be able to bury fiber-optic cabling between its branches, according to Svein Kittilsbraten, marketing director for Computer Connection A.S., the Norwegian firm chosen by Fellesdata and NCR to distribute and, in some cases, install the Whispernet product line.

Burying the cable is an expensive proposition that is not often allowed by the country's telecommunications industry, he said. Sparebanken Vestfold was given the chance to bury cable several years ago when the telephone company dug trenches for telephone lines and allowed some private firms to use the trenches.

Although a few banks have been able to take advantage of this, most will only install fiber-optic cabling within a single site. Others will communicate between the main office and their branches via an X.21 public data network, according to Kittilsbraten.

Unlike Mikkelsen, Kittilsbraten found that working with optical fiber requires cable pullers that have experience installing the medium. Some cables were broken during installation at other sites because of a lack of experience, he said.

Those who know how to work with fiber prefer it because they don't have to worry about the cable's proximity to noise-generating sources, such as electrical cables and lights.

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COMMUNICATIONS MANAGER

Which of the following are names of actual telephone companies?

Plain Dealing Telephone Co.
Blackduck Telephone Co.
Sleepy Eye Telephone Co.
Sledge Telephone Co.
War Telephone Co.
Peace Telephone Co.

Answer: All except Peace Telephone

Source: The Aries Group, Inc., Rockville, Md.

TURF WAR

Telecom to surpass MIS

Gartner Group chief predicts shift in balance of power.

BY MICHAEL FAHEY
Senior Writer

Savvy communications managers should prepare themselves for what is shaping up to be a battle for control of U.S. corporate communications operations, according to consulting and market research guru Gideon Gartner.

During a speech at the recent International Communications Association (ICA) conference, Gartner told ICA members that by the turn of the century, the telecommunications manager will possess more power than the top MIS executive.

The president and founder of Gartner Group, Inc., which advises more than 600 organizations on strategic business planning, said the power shift between MIS and telecommunications will occur in favor of telecommunications managers because gaining access to information will be more important than the information itself.

Communications departments, Gartner said, report to data processing in most corporations today. But, he said, "within the next 13 years, the chief information officer is more likely to have a telecom background than a computer systems or software background."

Gartner outlined seven keys to success for telecommunications managers that he said could help tilt the balance of power in their favor. Gartner's recommendations leaned heavily toward management issues, rather than technical matters. He advised his audience to know their organizations in depth and to pay particular attention to business needs and opportunities (see chart).

Communications managers contacted by *Network World* acknowledged the rivalry between voice and data communications personnel but expressed more interest in Gartner's prescription for success than in picking the outcome of the MIS/telecommunications battle for ascendancy.

"There is a battle for supremacy going on between voice and data," agreed Keith Nichols, manager of corporate telecommunications for Wickes Companies, Inc. in Santa Monica, Calif., and a corporate board member of the Tele-Communications Association (TCA). Nichols said his company has an integrated voice and data communications operation, but he is aware of the rivalry from discussion with colleagues and TCA members.

See page 20

Seven steps to get ahead

1. Develop an in-depth understanding of your vendors' strategies, as well as their products.
2. Keep track of the current and future technologies affecting your organization.
3. Train yourself in computer system and data communications technology.
4. Know your organization, particularly its business needs and opportunities.
5. Become more familiar with international communications issues.
6. Look for opportunities to link customers and suppliers, as well as internal users, to your organization's network.
7. Delegate the technical side, not the business side.

SOURCE: GARTNER GROUP, INC., STAMFORD, CONN.

GUIDELINES

MICHAEL FAHEY

Capitalizing on foreign expansion

Although many domestic corporations are expanding their overseas activities, the upper level management of these firms often overlooks the need to augment international business strategies with complementary communications plans, a fact communications managers can use to their advantage.

Communications managers can help their organizations take advantage of recent advances in voice and data communications to expand, or more efficiently exploit, international business opportunities.

Two studies by Coopers & Lybrand offer evidence of the gap between business and communications planning. In one study, the Big Eight accounting firm found that most large U.S. companies are implementing strategic international business plans. But a second study, conducted at the International Communications Association's (ICA) recent conference, showed that the same companies do not have strategic communications plans.

More than two-thirds of the 150 communications managers Coopers & Lybrand surveyed at ICA said their organizations had no international communications plan.

Thomas Y. Rush, national director of telecommunications services for Coopers & Lybrand, said he believes the ICA survey indicates the communications function is not yet integrated into the overall strategic planning process of many users.

Instead, the communications manager is struggling to catch up with strategic business plans implemented by upper management, which is often unaware of what is going on in the organization's communications operation.

Mark Ricca, vice-president of Eastern Management Group, a market research and consulting firm located in Parsippany, N.J., agreed that international communications planning is not adequately incorporated into the business plans of many companies that have international operations.

Ricca said there is often a tendency to leave the responsibility for overseas communications to someone who is "in country." He attributed this to the historic fear in U.S. companies of dealing with foreign tariffs and the companies' ignorance of the Byzantine ways of national Post, Telegraph and Telephone monopolies.

The apparent lack of centralized, international communications planning may present opportunities for the communications manager who wants to attract the attention of upper management.

Implementing a communications plan that takes strategic advantage of international suppliers, markets or means of production is sure to cause a stir in the boardroom.

In fact, in his prescription for success offered to communications managers at the ICA show, Gideon Gartner, president of Gartner Group, Inc., a Stamford, Conn.-based consulting company, advised communications managers to begin tracking the international communications environment.

He predicted that the international business arena would provide some of the biggest success stories of the 1990s, as well as opportunities for communications managers seeking ways to contribute to their organizations' success.

"If you have foreign customers or suppliers, I would encourage you to spend some time tracking the international telecommunications environment," Gartner said.

ASSOCIATIONS

The **International Communications Association** is sponsoring a lab and lecture on T-1 networks and T-1 multiplexing from June 14 to 19 at the University of Colorado at Boulder.

The week-long program, which will begin with an introductory laboratory session, will feature lectures and case studies presented by users, vendors and consultants. The program also includes a demonstration of T-1 multiplexers from a variety of vendors.

New England Telecommunications Association will hold its annual business meeting at the 57 Hotel in Boston June 17. The featured speaker will be David Cronin, administrative service manager for Polaroid Corp.'s telecommunications department. This is the association's last meeting for the fiscal year, and election of new officers will be held.

The **Association of Data Communications Users** will hold its national conference at the Bally Hotel in Atlantic City, June 29 to July 1.

The keynote speaker will be Delbert Staley, chairman and chief executive officer of Nynex Corp. Bruce Hoard, editor of *Network World*, will also be speaking. The conference will include 37 exhibits as well as a three-hour technical tutorial concerning IBM's Systems Network Architecture vs. open architecture.

▶ *"EXCELLENCE IN TECHNOLOGY"*

Aetna's Bailey wins CEO leadership award

BY MICHAEL FAHEY
Senior Writer

STAMFORD, Conn. — William O. Bailey, vice-chairman of Aetna Life & Casualty Co. and chairman and chief executive officer of MBIA, Inc., was recently named the 1987 winner of the "Excellence in Technology" award, sponsored by *Business Week*, Gartner Group, Inc. and the National Computer Conference.

The award is presented annually to a CEO who exhibits executive leadership in managing information technology.

A financial services company with $58 billion in assets, Aetna uses technology to control nearly every phase of its business operation. Bailey directed efforts in the mid-1960s to automate automobile insurance back-office operations. The system that was developed as a result of that effort, dubbed Safari, became one of the early online real-time systems in American business.

In the early 1970s, Bailey actively supported the development of Acclaim, a group health insurance processing system. Today, the system processes more than 200,000 claim transactions nationwide each day.

During the late 1970s, as president of Aetna, Bailey organized and directed the development of the Gemini system, which automated independent insurance agents' offices. As a result, Aetna has more terminals in agents' offices than any other insurance company, according to the award sponsors.

Fought for Privacy Act

Bailey also lobbied successfully for the Privacy Act of 1974, which imposes constraints on how U.S. government agencies handle information about people.

Bailey will receive the award on June 15 at a breakfast prior to the 1987 National Computer Conference in Chicago.

Previous winners of the award have been Robert L. Crandall, chairman and CEO of AMR Corp. and American Airlines, Inc., and Frederick W. Smith, chairman, CEO and founder of Federal Express Corp.

Telecom to surpass MIS

continued from page 19

Nichols said the winner of the voice vs. data struggle will vary from company to company, depending on many factors, including the organization's communications needs and upper management's feelings toward members of the rival departments. "You can only affect what is under your control," Nichols said. "Doing as good a job as possible and understanding how you can help the bottom line is the best plan."

Ken Germann, assistant manager for telecommunications at Brown Brothers Harriman & Co., a Wall Street investment banking and brokerage house, agreed that there is a rivalry between voice and data providers in many organizations. But like Nichols, he said the issue was not an important one at his company.

Brown Brothers & Harriman has separate voice and data operations and Germann attributes the lack of friction between voice and data personnel to that separation. "I think, in general, there is a rivalry at most shops," said Germann, who has responsibility for voice communications. "Here, the only time we have contact is when a new circuit is being installed."

Rather than worry about his status in relation to the data communications staff, Germann said he strives to impress management with his ability to contribute to the bottom line. "Believe me, that gets the attention of management," he said.

Jerry Marcone, assistant vice-president for telecommunications at Crum & Foster in Morristown, N.J., agreed with Gartner's recommendation that communications managers should concern themselves with their organizations' overall business strategies and look for ways to further those strategies. He disagreed, however, with Gartner's prediction that telecommunications managers will assume control of most corporations' communications operations.

"I think both jobs will continue to become more important, but the telecommunications manager will end up answering to MIS," Marcone said. He said he believes that, in general, upper management views MIS executives more positively than it does telecommunications managers. Therefore, he said, MIS is the incumbent in the race for control of the corporate communications department.

Although Marcone did not agree with Gartner's predictions, he said the adviser's speech was important because it focused awareness on the importance of managers paying more attention to overall corporate goals, rather than focusing on narrow technical issues.

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NEW PRODUCTS AND SERVICES

See inside for:
- ▶Management pack for DEC VAX
- ▶PC facsimile boards
- ▶Gateway packs linking LANs to host

▶ *GE FANUC AUTOMATION, N.A.*

Boards let Series Six access LANs

Products ease switch to GEnet Factory.

BY JIM BROWN
New Products Editor

CHARLOTTESVILLE, Va. — General Electric Fanuc Automation North America, Inc. recently introduced interface and modem boards that enable its Series Six Plus programmable controllers to access 5M bit/sec carrier band local-area networks.

The firm, a joint venture of General Electric Co. and Fanuc, Ltd. of Japan, is aiming the product at small to medium-sized manufacturers looking to connect computer equipment and programmable controllers on the factory floor. The GEnet Carrierband Local Area Network Interface is reportedly compliant with IEEE 802.4 carrier band local network standards.

Because these carrier band networks can serve as subnetworks for broadband backbone factory nets, the firm is also positioning the new product as a migration path to the GEnet Factory LAN, a broadband network based on the Manufacturing Automation Protocol. MAP is a user-driven standard intended to facilitate the task of networking factory-floor automation equipment.

Unlike broadband networks, which support several channels, carrier band nets support only one channel. Carrier band can be bridged to broadband backbone networks.

The new product consists of an interface controller board and a modem board, which plug into a Series Six Plus programmable controller CPU rack. The modem board is supplied by Industrial Networking, Inc., a joint venture of GE and Ungermann-Bass, Inc. The interface controller board supports up to 72 hours of random-access memory backup.

Communications software supported by the new product includes a distributed data-sharing protocol and a subset of MiniMAP, which is a three-layer protocol designed to allow devices on carrier band networks to exchange data in real time.

The product will also support the Enhanced Performance Architecture, which includes MiniMAP protocols, in addition to protocols that allow connected devices to access larger broadband-based networks. The firm plans to add support for the full MAP Version 2.2 in the near future and for MAP Version 3.0 when it is approved.

The communications services supported by the new product include Datagram, a real-time peer-to-peer protocol that supports message transfer from one network station to another, and the proprietary Global Data protocol, which enables a group of network stations to share the same data.

The GEnet Carrierband Local Area Network Interface's hardware and software components are priced at $3,150. Additional information is available from GE Fanuc's inquiry center at 114 Mayfield Ave., Edison, N.J. 08818, or call (800) 648-2001.

▶ *DATA STREAM CONVERSION*

Switch links to hosts

BY JIM BROWN
New Products Editor

ATLANTA — Microscience Corp. recently introduced a 128-port data switch with an onboard data format-conversion capability that allows a mix of asynchronous data communications equipment to access up to 16 different asynchronous host systems.

The Q-Net Resource Manager will reportedly convert an incoming asynchronous data stream from nearly any asynchronous terminal type to the asynchronous data stream of the device to which it will be connected. That process, the company claims, will allow computer systems from up to 16 different vendors to be connected through the unit.

The user of an asynchronous Digital Equipment Corp. VT-100 terminal or an IBM Personal Computer emulating an asynchronous terminal, for example, would sign onto Q-Net, enter a password and request to be connected to an asynchronous Hewlett-Packard Co. host computer port. Once the connection is made, Q-Net would receive the asynchronous DEC terminal or personal computer data stream and convert the bit length, stop bits and parity to comply with the asynchronous data stream the HP host expects.

The data stream conversion method is embedded in Q-Net software-based tables. Those tables define the type of asynchronous data stream coming into each port, thus allowing the Q-Net processor to determine whether the data stream needs to be converted before a connection is made. In order to connect to the synchronous world, a company spokesman said, users should attach a protocol converter to one of Q-Net's ports.

Q-Net supports RS-232 connections at speeds up to 9.6K bit/sec on a fully configured 128-port system and at speeds up to 19.2K bit/sec on systems configured with fewer ports. In addition to data stream conversion, the unit will support speed conversion by buffering incoming data received at one speed to match the output speed of the unit.

The product's minimum configuration is 32 ports. It can be expanded to up to 128 ports in increments of 32. The 32-port system includes a six-slot card cage, an I/O board, a CPU board using Motorola, Inc.'s 68010 microprocessor and a 32-port RS-232 distribution panel. Each fourth port on a 32-port system provides full modem support.

System passwords can be derived for each attached device, for each user and for groups of users. By creating user profiles, system managers can block access to certain devices for all but authorized personnel.

The system will also keep audit trails and call detail records. In addition, it will produce reports that list incorrect password attempts and include time references of when connections were initiated and terminated.

Q-Net can also be configured to support a block of terminals in a master/slave relationship. Such a configuration is useful for training employees on the use of terminals or applications. In this configuration, the designated master terminal can display duplicate copies of its screen on each of the slave terminals.

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▶ *ELECTRONIC MAIL*

Remote Net Courier pack bows

BY JOY KALFOPULOS
Network World Staff

VANCOUVER — Consumers Software, Inc. recently announced a version of its Network Courier electronic mail software that allows users of remote personal computers to connect to a central site E-mail system over dial-up lines.

The firm's Remote Dial-In (RDI) Courier is an IBM Personal Computer program that is used in conjunction with the firm's Inter-Network Courier package, a central site IBM Personal Computer AT program. The local network-based Inter-Network Courier provides what the firm calls E-mail post office functions for up to 150 RDI Courier users.

With RDI Courier, remote users dial into the central E-mail post office and send messages, which can include up to 10 DOS files, spreadsheets, documents or applications. The E-mail post office sorts the incoming messages and delivers them to local-area network-attached personal computers. It also sorts local E-mail for delivery to remote users.

The new package will permit, for example, sales and service personnel to exchange daily memos, reports, forecasts and documentation with the home office.

The RDI Courier also provides an automatic Address List Update function so that remote users can receive an up-to-date list of addressees any time a change is made at the home office.

In addition, the package has the ability to set message priority at several levels. Message priority allows users to indicate how quickly they would like their mail delivered. The priority levels range from immediate transmissions to a batch transfer at a specified time of day, including at night when telephone rates are cheaper.

The package provides another utility that informs message senders when the recipient has received an E-mail message.

Mail exchange between members of the Network Courier family conforms to the CCITT X.400 protocol standard. The package supports transmission speeds up to 9.6K bit/sec.

Consumers Software also markets a host of other Network Courier products that permit E-mail

See page 25

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First Look

Gateway packages link LANs to host at 56K bit/sec

Pathway Design, Inc. introduced two gateways that permit local-area network-attached personal computers to communicate with an IBM mainframe at up to 56K bit/sec over an IBM Systems Network Architecture network.

The **netPath SNA-3270/NetBIOS** gateway transfers data between an IBM host and a local network compatible with IBM's Network Basic I/O System. The gateway appears to the host as an IBM 3274 cluster controller with attached 3270 workstations.

The gateway will support host sessions for up to 32 network-attached IBM Personal Computers. A function key will allow personal computer users to toggle between the host session and a local DOS application.

Also included with the product is Pathway's ftPath 3270 personal computer file-transfer software, which enables users to transfer files between the host and either an individual personal computer or a local network file server.

The SNA-3270/NetBIOS gateway also provides some network management functions, such as online host session status and gateway session control. Audit trails of session activity and a trace facility are also included.

The gateway's software operates with a Pathway Design Intelligent Communications Adapter, a half-slot board that provides the interface from the local-area network to the SNA network. The Intelligent Communications Adapter contains an Intel Corp. 80188 microprocessor with 256K bytes of random-access memory.

The **netPath SNA-3770** gateway package supports batch file transfers between Novell, Inc. local-area network-attached personal computers and IBM mainframes over an IBM SNA network. The gateway makes personal computers appear as IBM 3770 Remote Job Entry workstations.

Users can access up to six concurrent host sessions, which the personal computer running the gateway software can display in windows along with line status reports. It will also operate in unattended mode.

The software requires use of an Intelligent Communications Adapter board.

NetPath SNA-3270/NetBIOS versions are available for eight, 16 and 32 users, priced at $2,595, $3,595 and $4,595, respectively. NetPath SNA-3770 is priced at $2,290.

Purchased together, both packages would cost $3,490 for eight users, $4,490 for 16 users and $5,490 for 32 users.

Pathway Design, Inc., 1 Apple Hill, P.O. Box 8179, Natick, Mass. 01760, or call (617) 237-7722.

Asher introduces facsimile, PC facsimile boards

Asher Technologies, Inc. recently introduced two facsimile products, a portable unit that can connect over an RS-232 cable to a portable personal computer and an internal board for IBM Personal Computers.

Supporting CCITT Group III transmissions, the **JT Fax** board allows IBM Personal Computers to send and receive facsimiles, and the portable **JT Fax** operates as a stand-alone or links to a portable personal computer over a serial RS-232 port.

ASCII text or documents scanned into the personal computer may be sent either from the computer screen or from a stored file.

Menu-driven personal computer software is used to initiate facsimile transmission. That software supports a facsimile phone number directory, automatic dialing and a scheduling system that allows the personal computer to send facsimiles unattended.

The firm also announced a software upgrade that allows personal computers attached to an IBM Network Basic I/O System-compatible network to access the facsimile board residing on another network-connected personal computer.

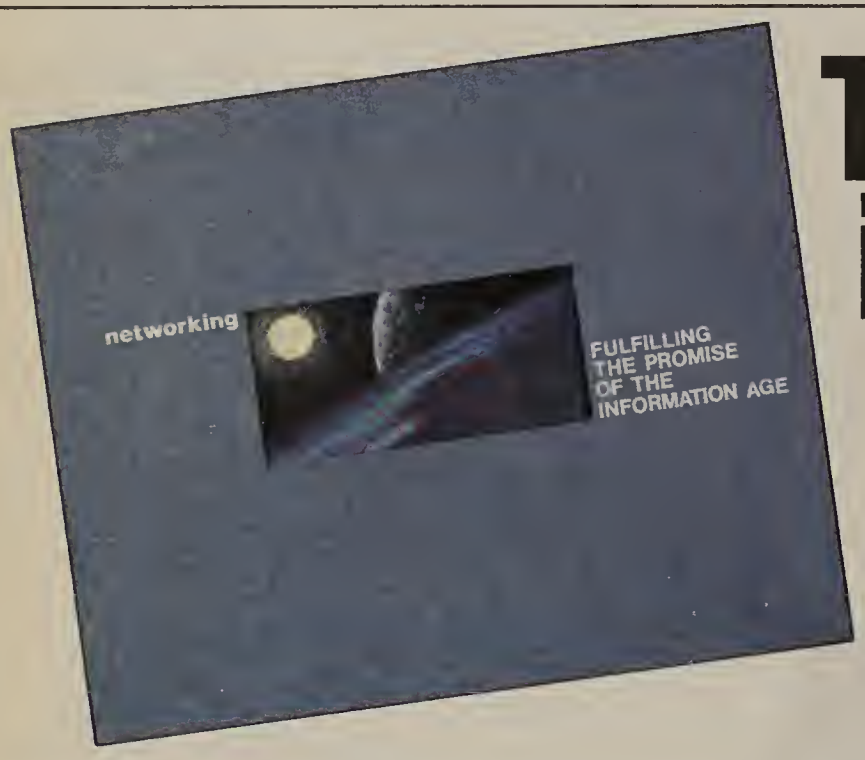
The internal JT Fax board costs $395, and the portable JT Fax is priced at $495. The software upgrade costs $199.

Asher Technologies, Inc., 1009-I Mansell Road, Roswell, Ga. 30076, or call (404) 993-4590.

Process management package for DEC VAX out

Weyerhaeuser Information Systems released a process-management software system that bridges a company's business computers with factory floor computing devices to improve process-control decision making.

The **ProSmart** package, which was first developed for use at Weyerhaeuser Co.'s paper processing plant, runs on a Digital Equipment Corp. VAX minicomputer and



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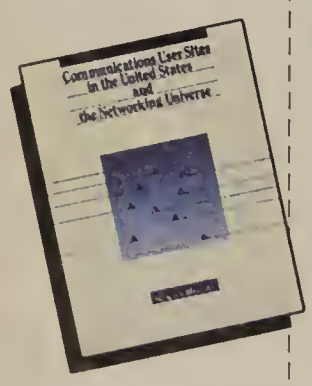

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consists of a data base with modeling functionality, graphics and trend analysis software tools.

The package allows managers to view data being collected from factory floor devices in real time. By viewing this real-time data, managers are able to monitor manufacturing process progress, troubleshoot the process, schedule new processes and analyze existing processes.

ProSmart also provides a link to IBM 4300 series mainframes as well as IBM Series/1 and Hewlett-Packard Co. Series 3000 minicomputers that allows managers to obtain part pricing information and other financial data.

It also provides a link to process control systems made by Foxboro and Accuray Corp. The package will support four concurrent window displays.

Pricing

Software prices range from $100,000 to $200,000, depending on the system configuration and amount of customization required.

Weyerheuser Information Systems, CCB 3 C, Tacoma, Wash. 98477, or call (800) 654-9347.

Remote Net Courier bows

continued from page 21

communications within local-area network environments, between different local-area networks, through gateways to minicomputers, mainframes and public E-mail hosts.

The RDI Courier software for the initial post office costs $495. The cost to add RDI Courier users is $95 each.

The new product runs on personal computers with 256K bytes of random-access memory, a modem and DOS 3.1.

Consumers Software is located at 603-73 Water St., Vancouver, B.C. V6B 1A1, or call (604) 688-4548.

Switch links to hosts

continued from page 21

The Q-Net system also has internal diagnostic routines that identify component failures.

It also features a battery backup that will retain configuration tables and other information for up to 60 hours after a power loss. System failure reports are also retained.

Installed at 30 beta test sites in both the government and private sectors, the 32-port Q-Net lists for $7,995.

A 64-port version lists for $9,795, while a 96-port version lists for $11,995. The fully loaded 128-port version lists for $13,795. Microscience will distribute the product directly to national accounts as well as through value-added resellers and distributors.

Microscience is located at 8601 Dunwoody Place, Suite 136, Atlanta, Ga. 30338, or call (404) 998-6551.

Software links DEC VAX/VMS to IBM mainframes

Joiner Associates, Inc. recently released a new version of its Jnet software that links Digital Equipment Corp. VAX/VMS systems to IBM mainframes.

Jnet Version 3.1 adds support for the Binary Synchronous Communications Network Job Entry (BSC NJE) protocols used by IBM's Remote Spooling Communications Subsystem (RSCS) Version 2. It also adds support for Job Entry Subsystems to the already supported IBM VM-to-VM BSC protocol. Jnet allows DEC's VAX systems to become full routing members of IBM NJE networks by emulating IBM's RSCS net program product.

Jnet also permits file transfer, electronic mail exchange and interactive communications on a peer-to-peer basis between IBM mainframe and DEC VAX users.

License fees for Jnet range from $7,000 to $23,500.

Joiner Associates, Inc., P.O. Box 5445, 3800 Regent St., Madison, Wis. 53705, or call (608) 238-8637.

Telephone resale and billback package upgraded

Xiox Corp. recently introduced a new version of an IBM Personal Computer-based telephone call-accounting software package.

Version 2 of the firm's resale and billback series of packages is designed to process, price and store telephone call records provided by a business telephone system.

The packages will allow hotels to bill guests automatically for telephone costs and to monitor administrative telephone use.

It features a night audit sequence, which enables hotels to print nightly telephone audit reports. The packages can also be used by firm's that rebill their clients for telephone charges.

The price for the software ranges from $875 to $8,875 and is based upon the number of telephone extensions supported.

Xiox Corp., 577 Airport Blvd., Suite 700, Burlingame, Calif. 94010, or call (415) 571-7911.

Play it again, Sam

Here's your chance to catch a classic — Communication Networks '87 sessions on audio or video tape!

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CW/Conference Management Group offers their educational sessions on video or audio tape. This is what one attendee had to say about Communication Networks '87 sessions. "I think CN is wonderful. It provides an opportunity to get a myriad of professional expertise and advice in many different areas within communications."

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Strategic Business Perspectives Series

These tapes offer a perspective for senior management on major shifts in the telecommunications industry and their business implications, covering breakthrough technologies, significant market realignment and the new networking environment.

Town Meeting

Modified Final Judgement — antitrust settlement impact on the telecommunications industry after five years. Peter Huber along with the representatives of the principal participants in this area will give their views on the beneficial and detrimental effects of the MFJ.

Who's in the Hot Seat

The communications industry's favorite pundit, Harry Newton, is in the "Hot Seat"! Listen to him field questions and answers in the way only he can.

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Opinions

Should the RBHCs be allowed to walk into information services?

PRO:

BY ARTHUR C. LATNO JR.
Special to Network World

If you apply any reasonable economic, legal or regulatory standard, the answer to this question clearly is yes.

When the Modified Final Judgment was formulated, the Department of Justice wisely agreed to add a waiver provision to the decree and to review the information services restriction every three years.

In February, the Justice Department strongly urged that this restriction be lifted. Not surprisingly, some information services vendors disagreed. However, the question is not which corporate entities will lose and which will win if the restriction is lifted, but will consumers benefit? The answer is an unequivocal yes.

RBHC entry into information services would expand users' choices. Today, access to advanced information services is largely limited to those who can afford private branch exchanges, private networks, personal computers and software.

The RBHCs would make information services available to anyone with local telephone service and would bring economies of scale that would make information services more affordable and enhance competition.

As information service providers, the RBHCs would compete with current providers and each other. Opening the telecommunications network would stimulate market entry by other providers of network-based information services.

RBHC entry into information services would also improve the ability of the U.S. to compete in the world economy. One of this country's greatest resources — the ubiquitous local telecommunications network — is in danger of becoming a relic. Public policy must be oriented toward using the full potential of the network for users' benefit.

The Japanese, for instance, have committed to investing $100 billion by the year 2000 to develop their network. France has also moved to provide sophisticated information services over its national telecommunications net. French network users have more service options than Americans do. An advanced net is a practical necessity for remaining competitive in the world economy.

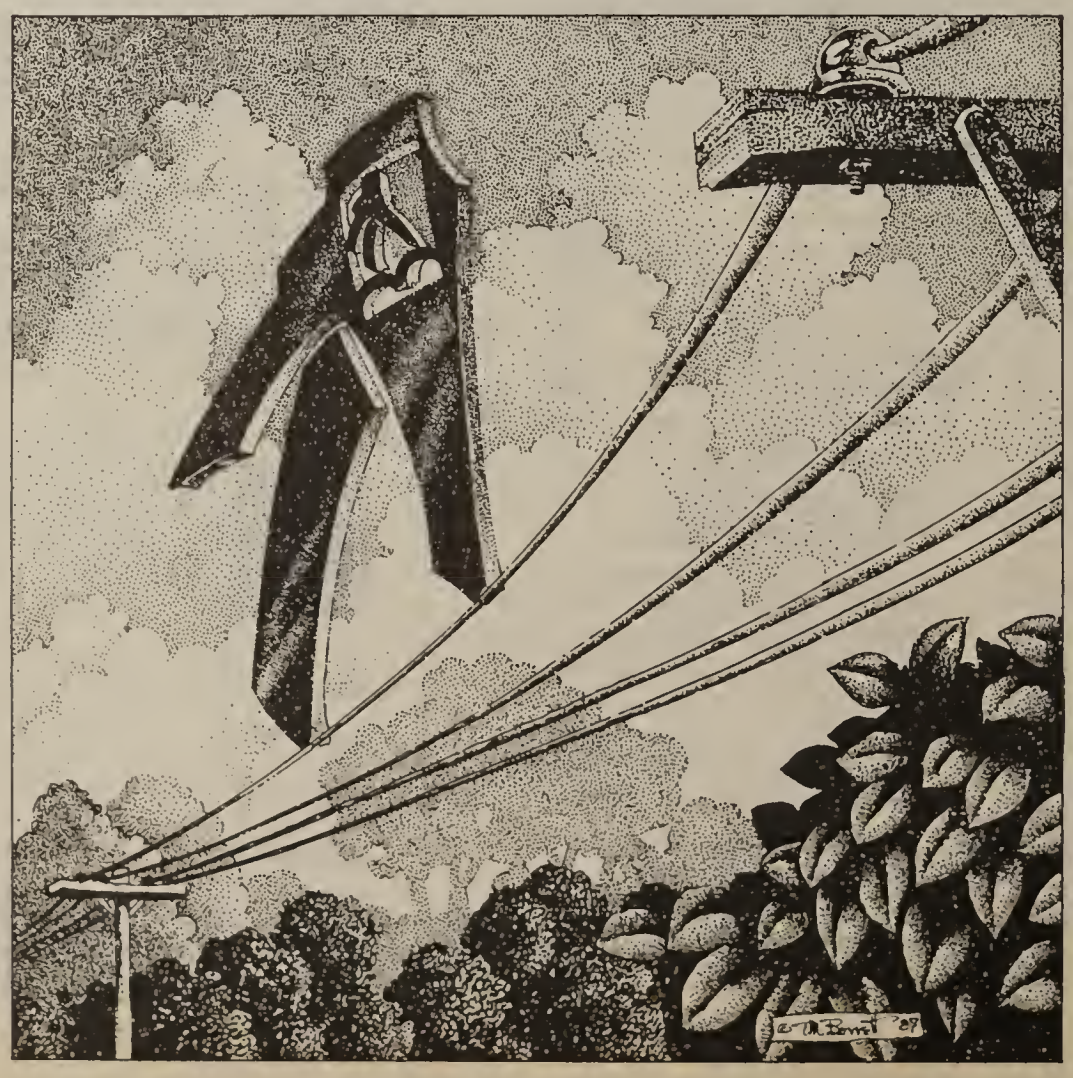
Finally, the U.S. information services market today is well-developed and funded. There's no danger that the RBHCs would monopolize or control it. To hear the self-serving warnings of some opponents, one would think the RBHCs have the power and desire to drive all others out of the information services market.

This isn't a weak or infant industry. As the Justice Department has pointed out in an earlier discussion of AT&T's provision of information services, the "literally thousands" of industry participants include "the nation's leading corporate giants as well as many smaller concerns."

Indeed, though they might prefer it that way, major suppliers of on-line information services, such as The Mead Corp., The Dun & Bradstreet Corp. and Dow Jones & Company, Inc., hardly need federal protection from competition in order to conduct their business. Even if the RBHCs were able and

See **Pro** on next page

Latno is executive vice-president at Pacific Telesis Group in San Francisco.



CON:

BY UZAL MARTZ JR.
Special to Network World

Since the regional Bell holding companies control the only available distribution network, they have an incentive to favor their information services over those of their competitors if allowed to enter the information services market.

Therefore, only content-neutral services such as voice storage, data processing and limited electronic directories should be offered under the existing waiver process.

Martz is a member of the board of directors for the American Newspaper Publishers Association in Reston, Va. He is also the president and publisher of The Pottsville Republican *in Pottsville, Pa.*

If a company plans to offer a new voice information service, it must contact the local operating company to order facilities and to locate target customers. And while the firm finalizes its business plan, the RBHC could review the firm's market research and strategic plan and adjust its own goals without incurring any risk.

When the new service is launched, the RBHC may favor its subsidiary's service by giving it priority allocation of lines and facilities. It can also "temporarily" reassign experts from its regulated business who can share planning information that benefits the RBHC's information service.

Some policymakers argue that without the RBHCs, the information services market will languish and users will suffer. But the discriminatory behavior that led to the Bell network breakup has changed little since divestiture.

Maintaining the current restrictions is essential until the court determines safeguards that will ensure a level playing field. And deregulation of information services such as electronic publishing would be warranted only if an RBHC's market share dropped to 75%, the standard threshold used in antitrust cases.

However, proposed Federal Communications Commission safeguards appear to be amorphous and inadequate. For example, Bell Atlantic Corp.'s request to provide electronic messaging and announcement services shows that an RBHC could give itself a significant price advantage over its competitors.

Also, the FCC's record of preventing cross-subsidization is abysmal. Its new accounting rules let each RBHC file entirely different accounting plans. And the burden would be on information service providers, not the RBHCs, to ask that their marketing information be withheld from the RBHCs' competing subsidiary.

The RBHCs argue that if only the local telephone companies were allowed into the information market, users could enjoy a service like the French Minitel system, which lets some two million customers access a myriad of information services.

However, the French experience demonstrates that an information service can be a success, despite the fact that the French Post, Telegraph and Telephone administration has virtually no involvement in the service's content and offers no storage or processing services. Further, the PTT's electronic directory is limited to name, data base location code and product category information.

Also, the RBHCs aren't pre-

Opinions

▶ TELETOONS — By Phil Frank

pared to give away terminals, the most important factor in the growth of the Minitel service. Finally, it appears that, except for electronic directories, the RBHCs could provide virtually all the components of the Minitel service — such as local data networks and free terminals — under the existing Modified Final Judgment rules.

The RBHCs may have other reasons for not following the French model. They may be reluctant to develop a more open network as long as they think the restrictions will be lifted, or they may fear that new competitors will undercut their lucrative print directory business.

Such competitors would be greatly aided by the deployment of sophisticated local networks and terminals, steps the RBHCs seem unwilling to take as long as they're prohibited from offering electronic directories.

The RBHCs should play a role in creating the infrastructure for new communications services. But FCC regulations and the RBHCs' own business judgment, not the divestiture agreement, are the stumbling blocks.

Pro from previous page

determined to dominate the information services market, they wouldn't get very far. Too many safeguards exist to prevent it.

The RBHCs are among the most exhaustively examined, and their telephone companies the most closely regulated, businesses in the country. Cost-accounting procedures, network disclosure rules and interconnection rules are vigorously enforced by the Federal Communications Commission and the state commissions, which also regularly conduct independent audits of RBHC books and records.

The FCC has concluded, and the Justice Department agrees, that these nonstructural safeguards are sufficient to protect the interests of information service providers and users.

RBHC entry into information services will give consumers far broader access to these services, increase competition in the industry and enhance the nation's ability to remain competitive in the world economy. The fact that it may discomfit some current industry participants is a small price to pay for these benefits.

DATA SPEED MANAGEMENT

JAMES HERMAN

Orders of magnitude

Phenomenal increases in communications speeds and capacities are changing our definition of what's possible and what's important.

Just a few years ago, 300 bit/sec was the norm for dial-up asynchronous terminal access. Now, it's 1,200 bit/sec going on 2,400 bit/sec, and modems that deliver 9.6K bit/sec should be standard issue within three years. (The K of course stands for the prefix kilo, meaning thousand.)

As we approach the limits — 14.4K or 16K bit/sec — of analog voice circuits, Integrated Services Digital Network promises to make 64K bit/sec digital dial-up a reality by the early 1990s.

The same trend is evident in leased-line speeds. Most large users started with 2,400 bit/sec multidrop systems in the late 1970s, migrated to 9.6K bit/sec analog and then to 56K bit/sec digital. These same users are now caught up in the T-1 revolution, operating at 1.544M bit/sec. (Note the introduction of scaling by millions, as shown by the M. This is the abbreviation for mega, from the Greek word for large.)

Although T-1 represents a major leap, it is not a stable plateau. The largest users are already planning backbones based on T-3 trunks that operate at 45M bit/sec. One major manufacturer has a backbone with a capacity of 405M bit/sec connecting three facilities. And they say it is already full!

Advances in technology, particularly in fiber optics, are a major driving force in these upward trends. Fiber is the basis for the new T-1 and T-3 long-distance digital transmission backbones. Many users are installing their own fiber cables. The Bell operating companies, fearing bypass, are moving fast to offer fiber loops to customer premises.

Fiber is nowhere near the limit of its capacity. A new generation of multiplexers is operating at 1.2G to 1.7G bit/sec. (Now we're into a new scale factor: a billion bits per second, designated by the letter G from the Greek prefix giga, meaning giant.) Laboratories report potential capacities of 20 times this amount.

Meanwhile, adaptations of local-area network techniques to fiber are reaching the point of commercialization and even standardization. The leading contender for a fiber local network standard is the Fiber Distributed Data Interface, a 100M bit/sec optical fiber network using token passing. Products based on this standard are expected as early as next year.

Is there any real need for these gigantic amounts of capacity? Yes. We are reaching the point where universal access to data services is a requirement, in much the same way that universal access to voice telephone service is taken for granted in most places.

Users are also getting hooked on the higher speeds and faster response times generated by the new high-capacity technologies. Today's local-net technologies — usually operating around 10M bit/sec — are conditioning users to expect push-button file transfers and virtually instantaneous full-screen painting at high resolution.

What will be the long-term effects of operating in the mega range? Today's experimental multimedia messaging systems will provide the basis for tomorrow's integrated voice, data and image communications capabilities. Pathways into supercomputers will expand like superhighways around a metropolis.

Amidst this bandwidth revolution, managers and designers must be careful not to be trapped by old thinking. The important issues are flexibility and extendability. Designers must develop standard building blocks that can deliver basic communications services in ever-changing configurations. Also needed are bandwidth management systems that can target communications capacity to changing application needs.

Ever-advancing technology will introduce even headier speeds. In case you're interested, the speed scaling factor for a trillion is T bit/sec, or terabits per second. Tera comes from the Greek word teras, meaning monster. We will surely have created a monster of a network by the time we need circuits operating in the terabit range.

Herman is director of the Telecommunications Consulting Group at BBN Communications Corp. in Cambridge, Mass.

NETWORK WORLD

Features
June 15, 1987

IBM NETWORKING

SNA's schizophrenic future

Continued from page 1

the early 1970s, networking meant tying clusters of dumb terminals to mainframes. Because of the high cost of putting processing power in multiple remote systems, IBM situated all network control functions at the mainframe.

To minimize the intelligence needed at each type of SNA network node, a rigid control and distribution hierarchy for network capabilities was developed: Network management and control were performed only by host mainframes (PU Type 5 nodes) and routing and packet switching by 3705 communications controllers (PU Type 4 nodes). Terminal cluster controllers (PU Type 2 nodes), such as 3274s, had little functionality (see Figure 1 on page 30).

This functional distribution among IBM products is no longer justified, as inexpensive microprocessors can provide distributed intelligence.

Furthermore, the way that networking functions have been distributed among SNA nodes creates several undesirable side effects.

Passmore is a principal at Network Strategies, Inc., a communications consulting firm in Fairfax, Va. He also teaches a class on Systems Network Architecture for Systems Technology Forum, a data communications seminar company in Fairfax.

SNA's marriage broker

Establishing an SNA session usually requires the involvement of the System Services Control Point (SSCP) located in the mainframe's VTAM software. The SSCP acts as a "marriage broker" between the

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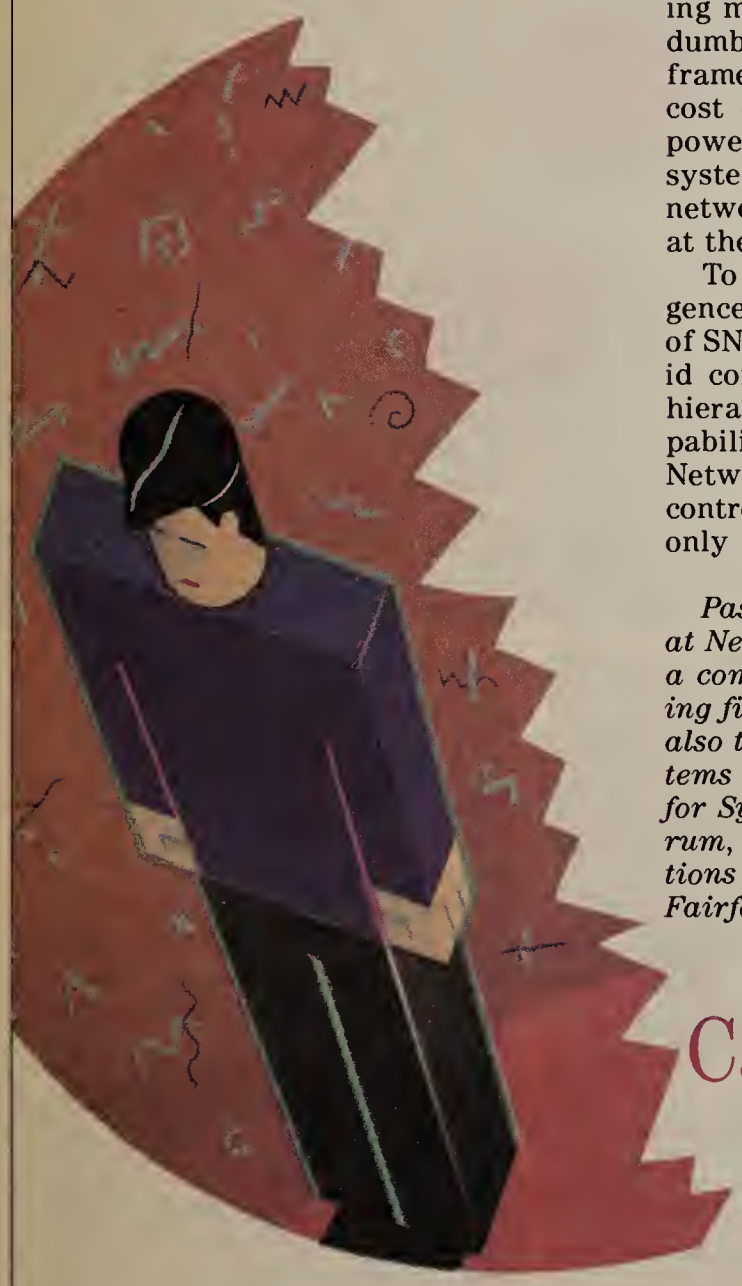
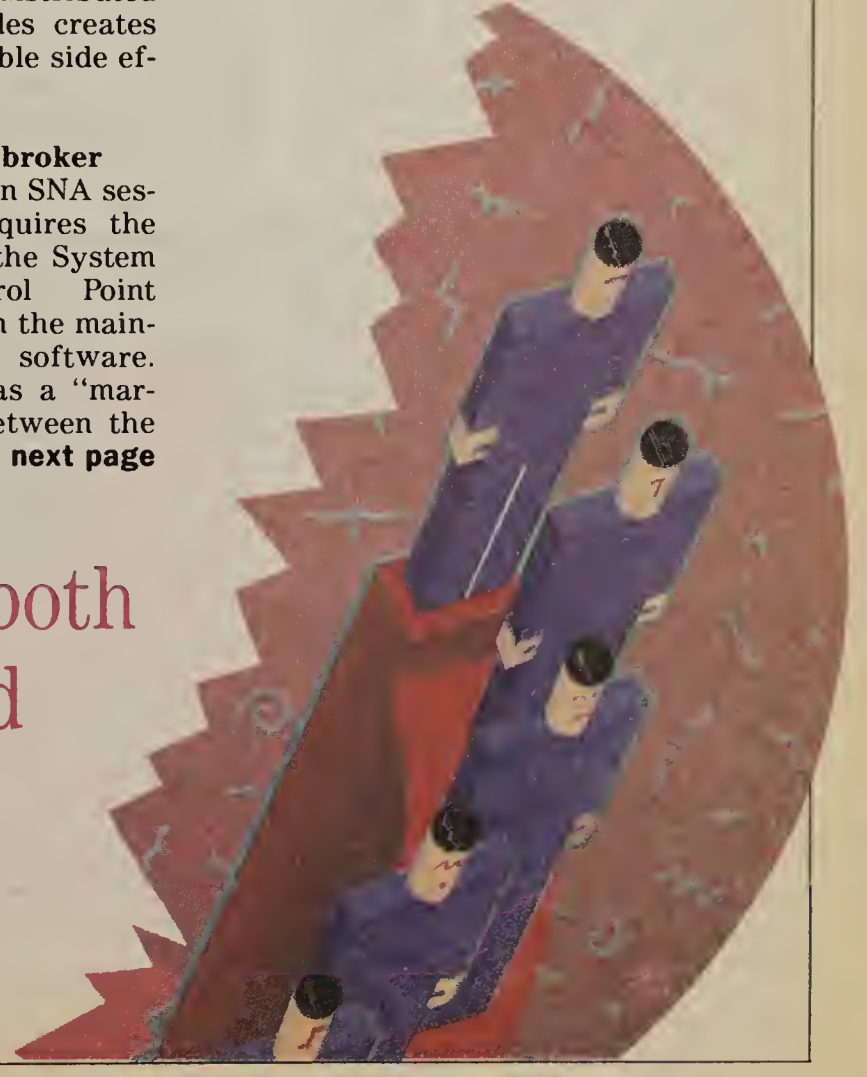
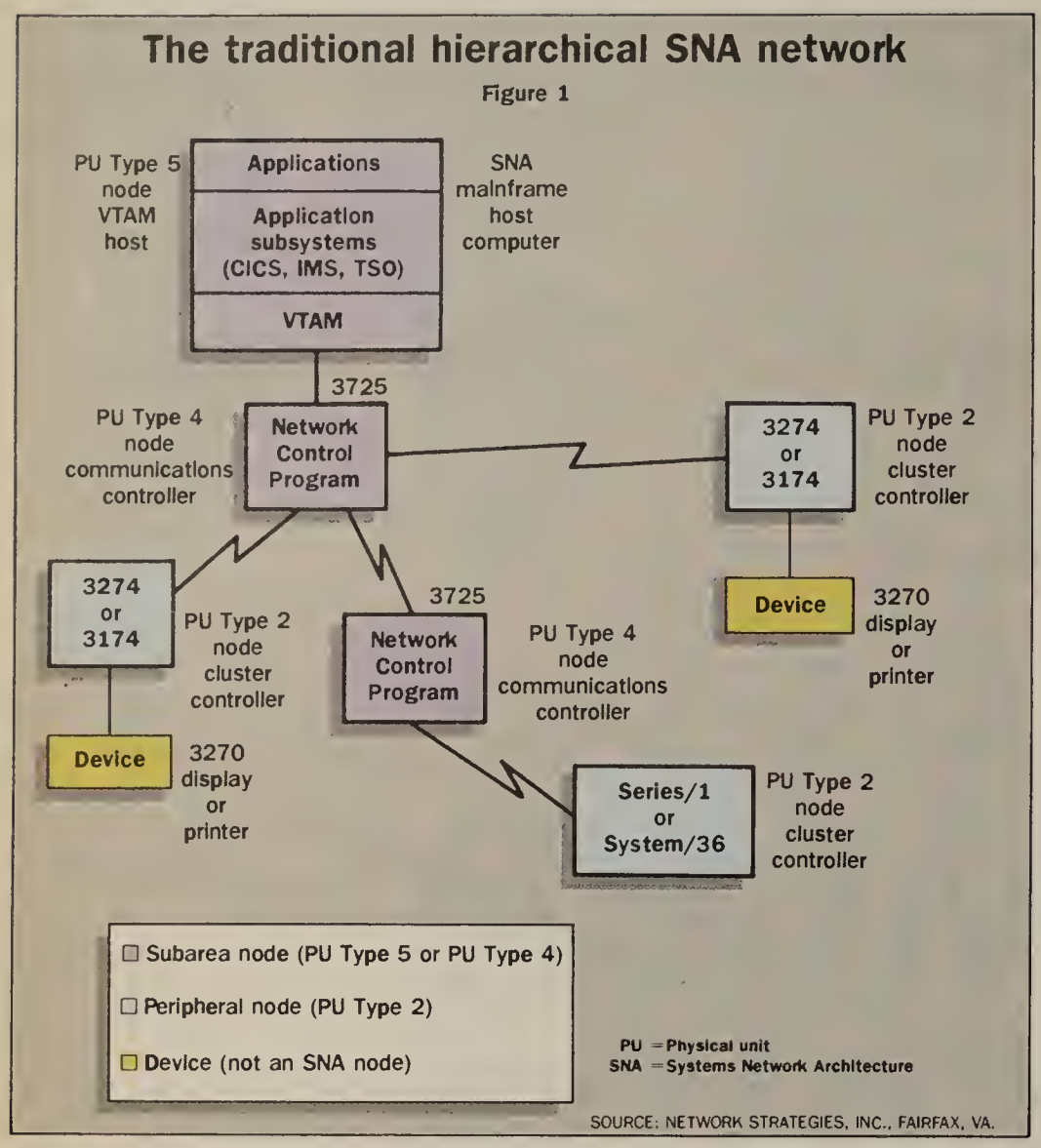




Can a network be both hierarchical and peer-to-peer?

ILLUSTRATION ©1987 STEVE LYONS



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terminal and applications that require interconnection, provides network directory name and address conversion, and maintains status information on all active network sessions.

While the use of an SSCP permits centralized control of a long-haul SNA network, its involvement in session establishment doesn't make sense for local-area network communications between office workstations. Also, IBM customers may want to implement smaller, departmental SNA networks that have no mainframes, and, therefore, no VTAM software with SSCP functions.

Another part of IBM's legacy of distributing SNA functions among its products is the architecture's limited capability to physically interconnect terminal cluster controllers. These controllers support only a single Synchronous Data Link Control link, which must be attached to a communications controller, such as a 3705 or 3725, in the SNA network backbone.

A terminal cluster controller cannot support multiple data link connections to other communications controllers or forward data received from one cluster controller to another.

Since IBM has implemented SNA workstations as terminal cluster controller, or PU 2, nodes, these limitations create undesirable restrictions for workstations in an office automation environment, where direct physical links connecting workstations or local networks are desirable.

Because of the restricted functionality of SNA terminal cluster controllers, IBM has developed its new PU 2.1 cluster controller node. Cluster controllers that implement PU 2.1 offer improved network connectivity.

For example, two PU 2.1 controllers can be directly linked via a dial-up, leased SDLC circuit or token-ring local net connection without requiring a path through a 3725 communications controller. PU 2.1 nodes are no longer restricted to a single data link connection but can support multiple links.

Also, PU 2.1 products can establish sessions without requiring mediation by a VTAM host-based SSCP. In fact, each PU 2.1 node contains its own mini-SSCP, called the Peripheral Node Control Point, which handles session establishment and control functions. This provides the connectivity for workstations and departmental workstations in the office.

IBM has formalized the PU 2.1 node concept by publishing *Format and Protocol Reference Manual: Architectural Logic for Type 2.1 Nodes.* PU 2.1 node implementations are also beginning to appear in products from other computer vendors, such as Data General Corp.

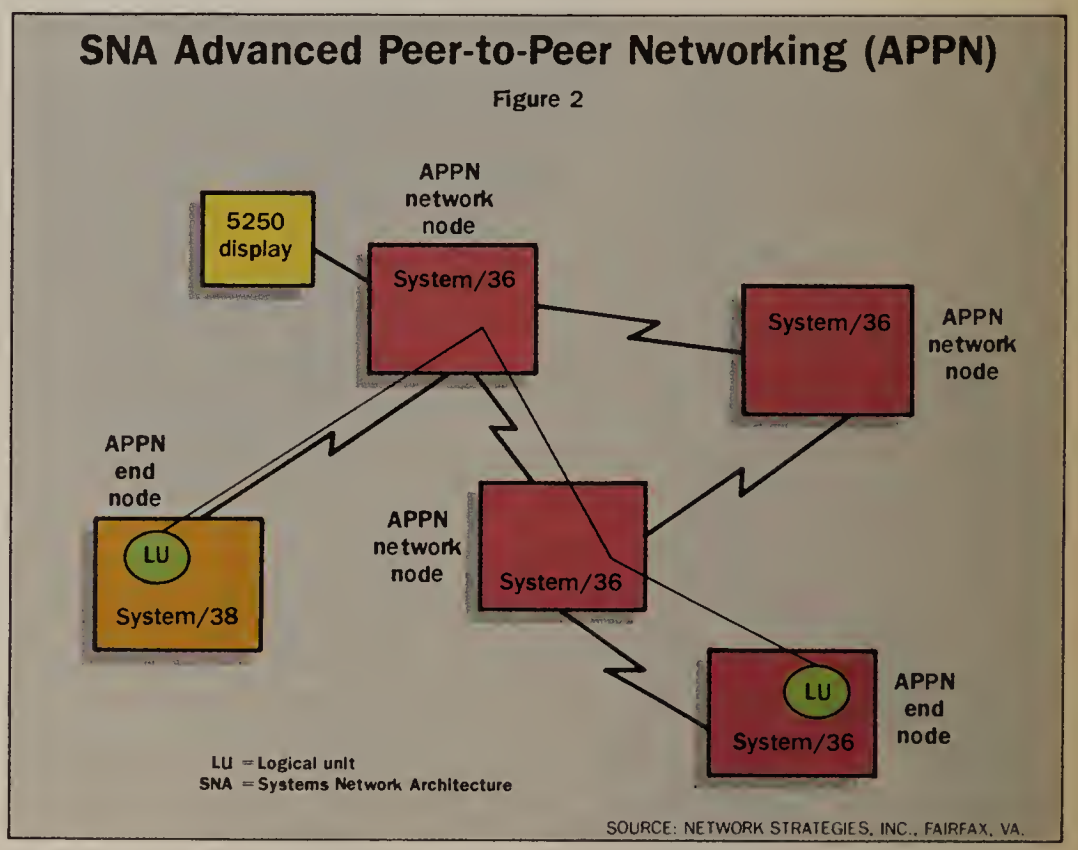
While PU 2.1 supports the physical link connectivity necessary to interconnect peer workstations, it doesn't provide all of the necessary logical functionality for peer-to-peer communications without mainframe host involvement.

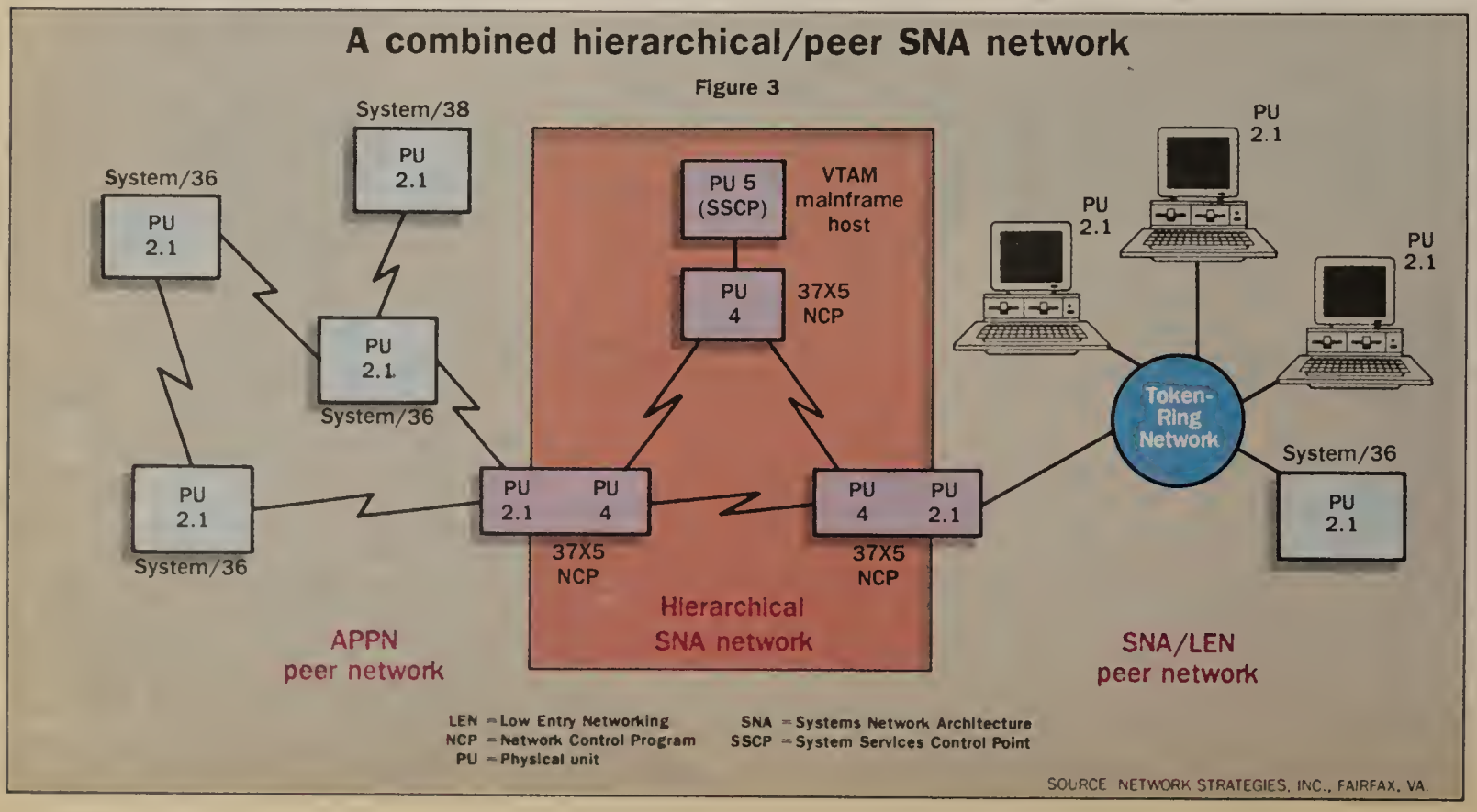
A shortcoming of most SNA products is the asymmetrical master/slave relationship that exists between most SNA session partners. Mainframe host subsystems such as CICS, IMS and TSO are always implemented as the session master, or primary logical unit, while the terminal cluster controller is always the slave, or secondary logical unit.

Sessions can't be directly established between two secondary logical units. With no primary logical unit, neither partner can initiate or terminate the session, and neither has session error recovery capabilities. Consequently, sessions normally can't be established directly between SNA terminals or cluster controllers; a host mainframe application must be one of the session partners.

Enter LU 6.2

For workstation-to-workstation communications between intelligent systems, IBM developed LU 6.2, or Advanced Program-to-Program Communications, a generic "process-to-process" communications protocol.





LU 6.2, an SNA session protocol, is a refinement of LU 6, which allows communications between mainframe application subsystems. LU 6.2 supports a well-defined set of APPC "verbs," which are the commands used by user-written application programs to obtain network service from the logical unit in IBM's operating system or application subsystem products.

IBM has also formalized LU 6.2 by publishing *Format and Protocol Reference Manual: Architectural Logic for LU Type 6.2.* LU 6.2 is the standard for SNA communications between new IBM products, particularly in the office.

Unlike the older SNA session protocols, LU 6.2 drops the master/slave orientation. LU 6.2 sessions don't have primary and secondary session partners. Instead, two systems communicating via LU 6.2 are peers. Either system

can establish or terminate the session, and either can initiate session error recovery procedures.

In addition, when the LU 6.2 implementations at each end of a session reside in PU 2.1 nodes, the SSCP in VTAM is no longer involved in session establishment or control. Sessions can be established between arbitrary workstations supporting both LU 6.2 and PU 2.1. This is ideal in local office environments where a VTAM host does not exist. For example, two IBM Personal Computers can establish an LU 6.2 session on a Token-Ring Network without VTAM host involvement.

The direct link drawback

Because this new peer SNA is so radically different from the traditional hierarchical SNA of VTAM networks, IBM created a new term to describe it: SNA Low Entry Networking (SNA/LEN). All SNA/LEN products support both LU 6.2 and PU 2.1. SNA/LEN product implementations include the System/36 and /38, Series/1 running RPS, System/88 running APPC, 5520, Displaywriter, Scanmaster and the Personal Computer running APPC/PC software.

But these products still have a limitation: Connectivity between PU 2.1 nodes is restricted to point-to-point physical links. To create a fully interconnected network, each node must be directly linked to all others.

One solution is to use a local-area network such as IBM's Token-Ring Network, but this works only within a local environment. Eliminating this restriction requires support for an intermediate routing capability.

While such a capability has existed for years in PU Type 4 nodes — 3705 or 3725 communications controllers running Network Control Program (NCP) software — these nodes are currently incompatible with peer PU 2.1 communications. Instead, IBM developed an intermediate node-routing capability for selected PU 2.1 products.

A few years ago, IBM developed an experimental network in Europe that exploited the peer-coupled sessions of LU 6.2 and built upon the enhanced peer-to-peer connectivity of PU 2.1 cluster controllers. Within this network, a cluster controller could perform intermediate routing of SNA sessions destined for another controller.

Also, instead of the predefined static routing tables used by 37X5 communications controllers, these nodes could perform dynamic routing. In fact, there were many similarities between the routing techniques used by these nodes and the dynamic routing techniques used by many X.25 packet-switching networks.

Last year, IBM announced products that implement these capabilities: Advanced Peer-to-Peer Networking (APPN) in System/36s and System/38s. APPN lets users communicate on a logical point-to-point basis across a network of System/36s that are interconnected via an arbitrary network topology (see Figure 2 on page 30).

System/38s can participate only as APPN end nodes and require connection to a System/36 for intermediate routing. These first implementations support SNA Distribution Services document distribution, display station pass-through, distributed data management and APPC/LU 6.2 verbs for distributed transaction programs.

In addition to enhanced cluster-controller routing capabilities, APPN supports arbitrary network interconnection topologies, switched as well as full-period circuits, decentralized network control and enhanced ease of use. APPN supports switched and leased SDLC lines, X.25 circuits and Token-Ring local network connections.

One key feature is that each APPN node "learns" about the network topology from neighboring nodes. Consequently, unlike in traditional VTAM/NCP hierarchical SNA networks, there are no time-consuming "gen" procedures in which programmers must create manual network definitions and generate object code for downline loading into communications processors.

APPN also permits a "bottom-up" systems approach in which departmental systems and personal computer workstations are installed first, unlike today's mainframe-oriented, "top-down" SNA environment.

So far, IBM considers APPN to be a feature, not an architecture, and APPN has no architectural reference documentation. Unofficially, however, documentation of a formal SNA architecture for APPN is believed to be about 95% complete.

SNA schizophrenia

As with SNA/LEN, APPN networks today operate independently of traditional SNA networks and, therefore, cannot share transmission facilities.

As a result, two completely different types of SNA networks can be implemented by users today: hierarchical networks, including VTAM, NCP and PU 2.0 cluster controller nodes; and peer networks supporting SNA/LEN and APPN products.

As IBM introduces more peer SNA/LEN and APPN products, how will these two different types of SNA networks coexist? Of even more concern is the question: Will hierarchical SNA disappear?

The answer is found by examining the products that span both types of networks and by considering the shortcomings of SNA/LEN. If an APPN or SNA/LEN product is linked to a VTAM host-controlled hierarchical SNA network, the product appears to VTAM as a PU 2.0 node.

Consequently, peer node products can act schizophrenic, both as PU 2.1 nodes for peer communications with other PU 2.1 nodes and as PU 2.0 nodes for communications with NCP communications controllers and VTAM hosts.

A major limitation is that SNA/LEN nodes cannot communicate across a hierarchical SNA network. For example, a System/36 linked to an NCP node can't establish a session across a network of VTAM and NCP nodes to another System/36 on an NCP node. This problem will be corrected by IBM's forthcoming addition of PU 2.1 support for NCP.

Once this happens, an NCP node can communicate with SNA/LEN or APPN products as a peer PU 2.1 node and still communicate with other subarea NCP and VTAM nodes as a subarea PU 4 node.

Sessions originating at SNA/LEN or APPN nodes can then ride the hierarchical SNA backbone across NCP and VTAM nodes to remote locations, where the remote NCP can support peer communications with the appropriate destination node. This will allow office systems that support peer SNA sessions to utilize existing hierarchical SNA networks for long-haul communications with other remote office systems.

Reconcilable differences

Users should also consider IBM's plans for mainframe host participation in peer networking. The VM/SP Release 5 operating system already supports peer networking.

When running in a 9370 — a small System/370-compatible "mainframe" targeted at departmental minicomputer environments — the Transaction Service Access Facility (TSAF) virtual machine included in VM/SP Release 5 provides for VM-to-VM communications over channel-to-channel, Token-Ring, Ethernet or Binary Synchronous Communications links. A virtual machine can be defined as a form of time-sharing that allows multiple operating systems to run on the same machine at the same time. Each system thinks it has the machine to itself.

> So far, IBM considers APPN to be a feature, not an architecture.

However, no SNA protocols are used for communications between 9370s, despite similarities between the TSAF APPC application program verb interface and LU 6.2's APPC verb interface. IBM's next logical step would be to add an SNA/LEN or APPN capability to TSAF. This would allow 9370s to participate in peer SNA networks as PU 2.1 nodes and let the APPC/VM verb interface support real LU 6.2 sessions.

Industry experts expect VTAM to support peer SNA and predict that IBM will add LU 6.2 support. While this is important, LU 6.2 support in VTAM hosts already exists when running CICS.

More significant will be IBM's addition of PU 2.1 peer networking support to VTAM. As with IBM's plans for adding PU 2.1 to NCP, a VTAM host will be able to communicate with SNA/LEN or APPN products as a peer PU 2.1 node while communicating with other subarea NCP and VTAM nodes as a subarea PU 5 node. This will provide users with great flexibility in deciding whether their VTAM hosts participate in SNA networks as peer or hierarchical (subarea) nodes, or both at once.

The efficiency of communications between the two types of networks is unclear, but overhead shouldn't be much worse than that of traditional hierarchical SNA networks.

APPN limitations

If all IBM products supported only peer SNA, and hierarchical SNA (PU Type 4 and 5 nodes) capabilities were eliminated, communications would be simpler in small networks.

Such a configuration is not possible with large networks, however. Because of APPN's dynamic routing capability, every node must learn the network topology from its neighbor nodes, which learn from their neighbor nodes, and so on. As the number of nodes increases, this algorithm breaks down; the overhead associated with passing network topology data and the effort required for each node to keep track of the status of every other node becomes prohibitive.

Consequently, an APPN peer SNA network is limited to about 100 nodes. This architectural restriction is unlikely to change.

Since wide-area SNA networks with more than 100 nodes are common, APPN by itself can't support large users' networking requirements.

By contrast, hierarchical SNA networks can easily support tens of thousands of nodes and devices. Also, the use of an SSCP in hierarchical SNA networks provides for strong centralized network management and control, a capability lacking in peer SNA products. Therefore, users can safely assume that IBM will not do away with hierarchical SNA networks or products.

However, hierarchical SNA products will evolve to include alternate routing capabilities, for example, to allow a virtual route to use an alternate explicit route if the explicit route to which it was originally assigned experiences a failure. This evolution will also eliminate today's requirement of taking down portions of the network for node gen procedures.

A combination of hierarchical and peer SNA networking (see Figure 3 on page 30) makes sense for customers with both peer communications requirements and the need to support many systems in their networks.

These networks will employ NCP and VTAM nodes as a global network backbone that supports communications between multiple attached local peer SNA networks. Users should begin thinking about how such a configuration might be employed within their own SNA networks.

"...I'm looking for vendors who take a systems approach to networking. And I find them in *Network World*..."

Robert Stark is Manager of Network Operations for Litton Industries of Beverly Hills, California. He supervises the company's voice network analysts as well as those analysts who provide telecommunications consulting services to Litton divisions.

In this position, he is also charged with establishing specifications and making recommendations for the purchase of network communications equipment. And in order to carry out these responsibilities, Robert turns to *Network World.*

"Reading *Network World* definitely helps me in my job. I get crucial information about the viability of certain vendors, which lets me know if I should enter a business relationship with long-term expectations. In my job I'm looking for vendors who take a systems approach to networking. And I find them in *Network World,* which covers networking from a systems point of view.

"*Network World* is required reading for my department. That's because it provides total coverage of all levels of networking. Whether it's voice, data, local area, or wide area, *Network World* has it covered. It's our primary source for information on user trends and emerging technologies as well.

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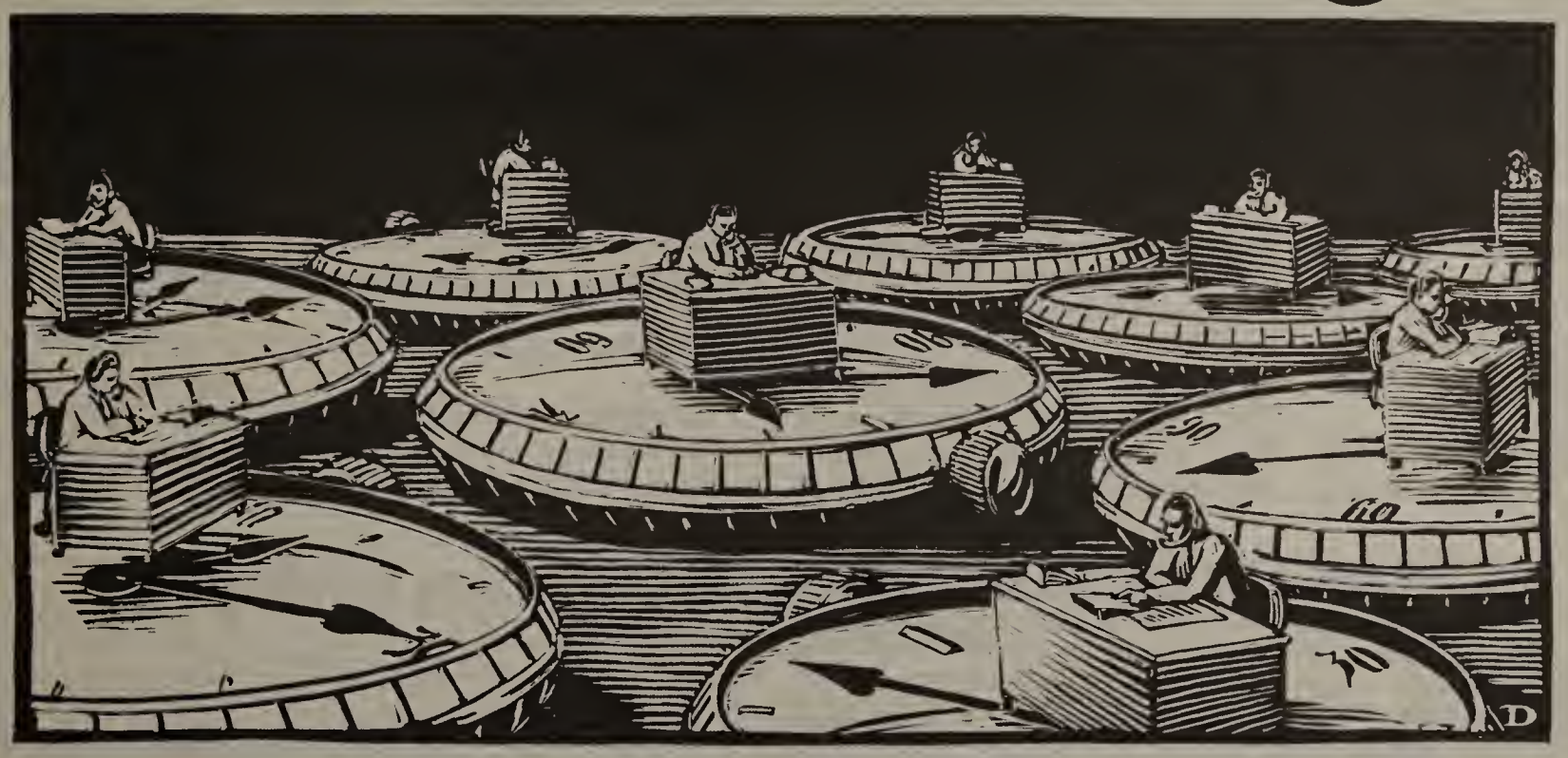
▶ *AUTOMATIC CALL DISTRIBUTORS*

Dial directing



BY THOMAS LABELLE
Special to Network World

ACDs do more than route calls. They can help managers run their telephone systems like clockwork.

In any business, time is money. As a growing number of companies rely more and more on their telephone systems for customer contact and revenue, managers are becoming aware of the great need to manage telephone time and use by employees. One of the better means of directing telephone traffic and managing the system is an automatic call distributor (ACD).

An ACD can be a stand-alone system or an integrated subroutine within an advanced private branch exchange. In cases where the ACD is integrated with a PBX, the PBX and ACD functions are strictly partitioned from one another. The stand-alone systems can, with some degree of success, be integrated with a separate PBX or Centrex through the local telephone company central office.

The three parts of an ACD

An ACD has three major components: the incoming trunk lines, the switching equipment (or switch) and the employees' telephone sets (in ACD lingo, such employees are known as agents).

■ **Trunks.** An ACD's trunks can be any number and combination of local central office trunks, 800 trunks, foreign exchange circuits from another city or tie trunks to another PBX and ACD. These trunks can be segregated into different trunk groups as the manager dictates, and each group can be assigned a priority level for processing. A good example of this is where 800 trunks are processed ahead of local calls in order to keep the 800 bill as low as possible.

Because they are designed to answer as many calls as possible, ACDs are invariably equipped with more trunks than agent stations — just the opposite of the conventional PBX.

■ **Switching equipment.** This is where all the action takes place. It is the heart of an ACD. Its chief job is to answer incoming calls and distribute the load evenly among available agents. Usually, this is done through an algorithm. This algorithm determines the length of time each agent has gone without a call, tallies the number of calls each agent has taken and totals the aggregate amount of time those calls took. The ACD then automatically sends the next call to the agent who, according to the algorithm, has handled the least amount of traffic.

Continued on page 35

LaBelle is senior associate at LaBelle & LaBelle, a telecommunications and data processing consulting firm in Seattle.

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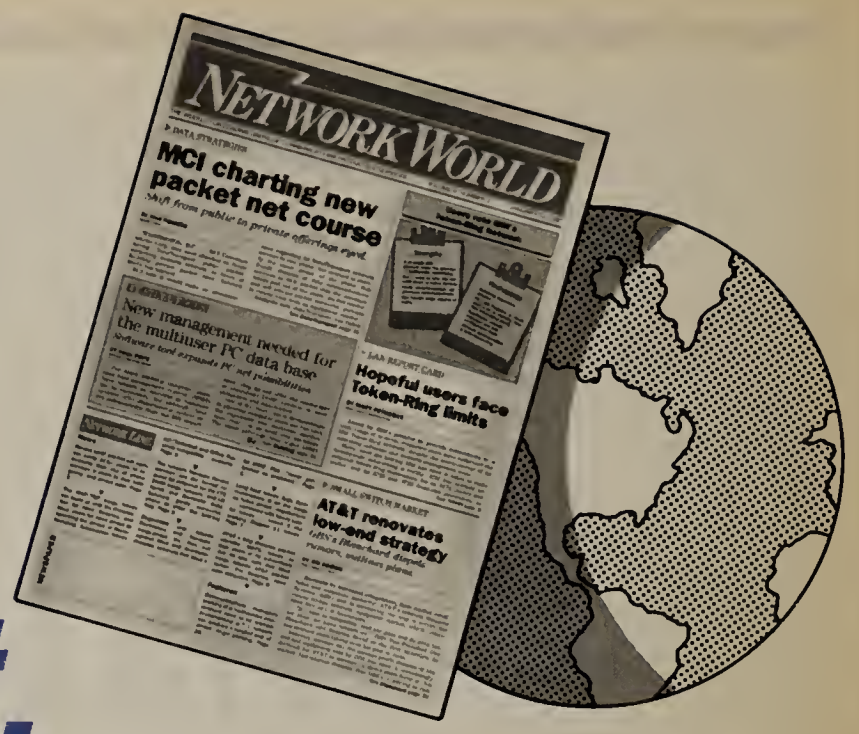
As networking takes over the world, Network World takes over the market.



The trend has never been clearer. Networking is now the major application market for communications. And a recent statement by Ken Olsen, President and Founder of Digital Equipment Corporation, substantiates this trend: "We have to start thinking of the computers as peripherals. You start with the network, then you hang the computers on later."

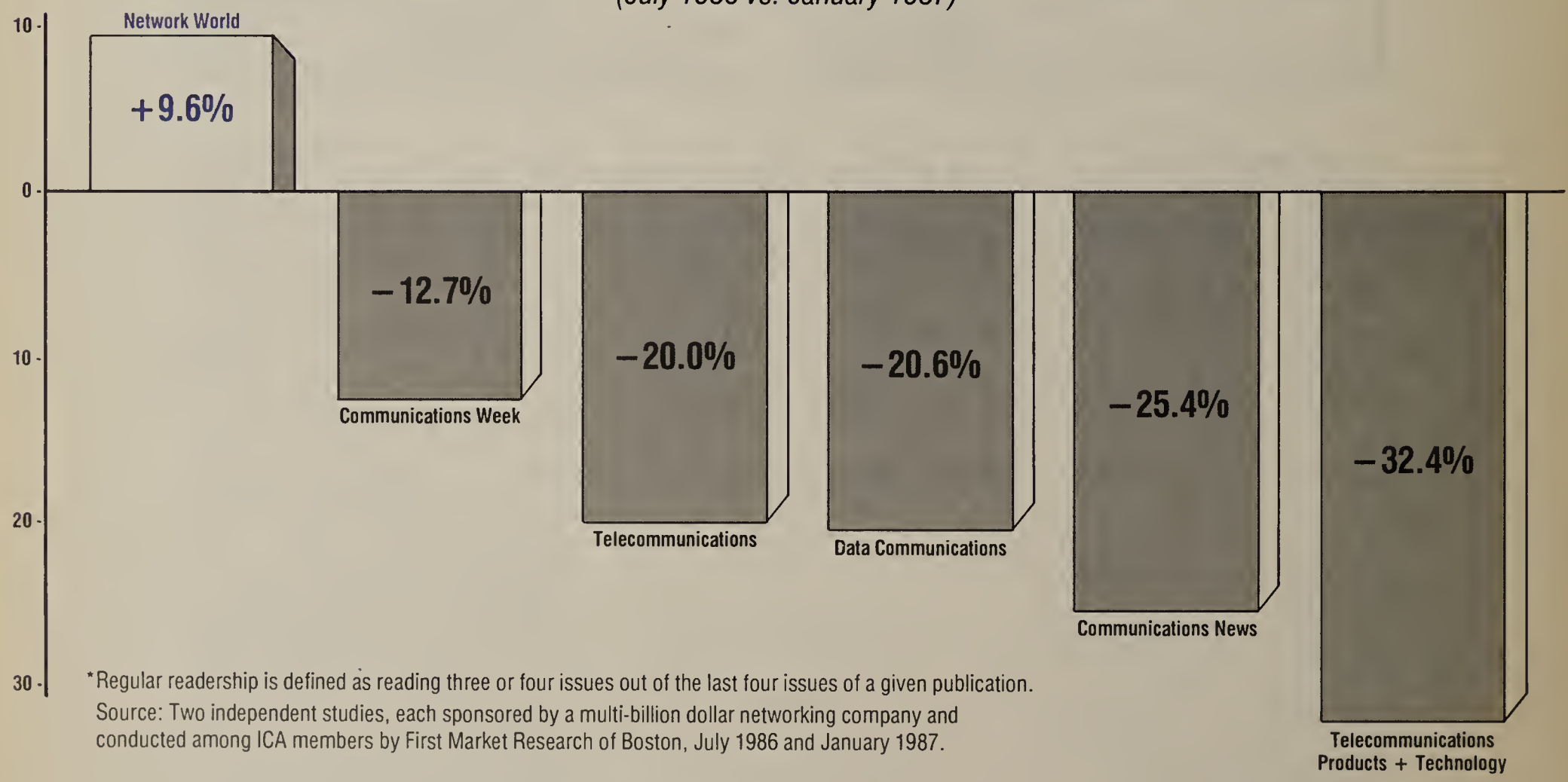
Networking. It's been *Network World's* focus from the very start. In fact, it is the *only* publication that covers the entire realm of communications from the networking point of view. And in doing so, *Network World* has established itself as the *standard* for communications users already networked or planning to network.

Today's users know they need up-to-date information in order to keep pace with the evolving world of networking. That's why they read *Network World*. And that's why *Network World* was the only publication to gain in regular readership in an independent study conducted among ICA (International Communications Association) members, some of the nation's most influential buying decision-makers for voice and data communications products and services.

The study, sponsored by a multi-billion dollar networking company and conducted in January 1987 by First Market Research of Boston, showed decreased readership of all communications oriented publications among ICA members since a previous study in July 1986. Only *Network World,* with its exclusive networking-oriented coverage, experienced an increase in regular readership. The percentage increase/decrease for each publication over that six-month period is displayed in the following chart.

Percentage Change in Regular Readership* among ICA Members

(July 1986 vs. January 1987)



*Regular readership is defined as reading three or four issues out of the last four issues of a given publication.

Source: Two independent studies, each sponsored by a multi-billion dollar networking company and conducted among ICA members by First Market Research of Boston, July 1986 and January 1987.

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From page 33

Managers can program the ACD to select either the next incoming call or the call waiting in queue the longest. This kind of queuing is known as First In, First Out, or "FIFO." FIFO makes sure each agent receives an equal amount of work. A good ACD gives the manager absolute control over everything it does. A modern ACD can be adjusted, changed, modified and fine-tuned by its manager, minute-by-minute.

■ **Agents.** As in the case of trunks, the agents' stations can be segregated into distinct groups. Each agent group is assigned to take calls from only specified trunk groups. The exact configurations are up to the ACD manager and can be changed at any time.

As for the agents' telephone sets, their quality and utility vary quite a bit. In the newer integrated ACD/PBX systems, the agents' sets are usually a version of the manufacturer's most versatile PBX telephone set modified for ACD applications.

The modifications usually consist of marking the keys with special legends for ACD features, plus reworking the LED or LCD displays to show the operational status of certain ACD functions.

The quality of the agents' sets has a direct bearing on how well and how quickly the agents adapt to a new ACD: The better the set, the better the adaptation.

A lot of this is psychological. The agents see that the company has invested some big bucks in the ACD — and, consequently, in their jobs as well — and this tends to raise their self-esteem, sense of importance and esprit de corps, as well as their productivity.

Managing with an ACD

Walk into the office of an ACD manager and you will see two things sitting on the desk: an ACD agent's set rigged for use by the manager and a CRT (with printer) hard-wired into the ACD's common control.

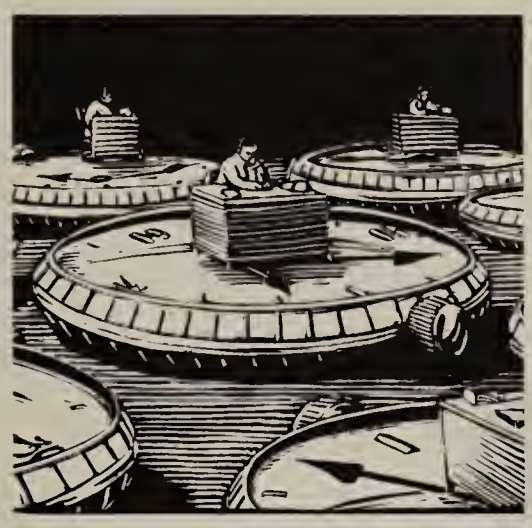
Through this terminal, it is possible not only to control and operate the ACD, but to see the real-time performance of every agent and trunk in the entire system. It is in this last area, the compilation of statistics, where an ACD supplies many benefits.

A good ACD provides a lot more information than the primitive data you get out of a normal station message detail recorder (SMDR). SMDRs are just "gotcha" devices to catch the janitor who's making toll calls to Grandpa upstate. Or, if more noble motives prevail, they are used to budget the company's toll call expenses, department by department.

An ACD, however, is going to tell the manager a lot of other things. Here are some examples:

■ **Individual agents.** What time an agent logged on or off the system, how many calls that agent took during the period, the average length of time that agent spent on each call (as well as noting exceptions such as longest and shortest calls), how much of the logged-on time the agent spent doing other kinds of work and was not able to take calls. It will also show which agent group or groups the individual was assigned to throughout the day.

■ **Agent groups.** An ACD can compare the statistics of each agent in a group, so the manager can see how each agent performs in contrast to coworkers or to some objective benchmark. The ACD can also show how many agents were logged on in each group on an hour-by-hour basis, so daily traffic volumes can be plotted and agents scheduled accordingly.



A good automatic call distributor provides a lot more information than the primitive data you get out of a normal station message detail recorder.

■ **Trunks and trunk groups.** An ACD can note such things as the number of rings before the ACD answers a call. It can also show the average length of time callers remained in the trunk group's FIFO queue before being answered or sent to a secondary "overflow" agent group or before the caller hung up. The ACD can also show the number and duration of any all-trunks-busy (ATB) conditions in each group and the times this took place, as well as the general amount of traffic passing through each group each day. Also, where there are some bad trunks, the ACD can show them not handling an appropriate volume of traffic.

This is by no means a complete roster of the reports generated by an ACD. The manager can call up any of this information on the CRT at any time and have any of it printed out on command or at a prescheduled time each day. Furthermore, some ACDs retain all the information they gather for one full year and can compute histories for each category, allowing the manager to track the performance of the ACD and individual agents.

ACD data can be used for many strategic purposes, such as developing merit-based compensation plans for the agents, bringing all agents into uniform standards of performance, predicting upcoming daily busy hours and seasonal peaks with accuracy so that managers can plan for the most efficient staffing.

Planning for an ACD

Talk with the person (usually the sales manager) in charge of telephone sales in your company. Find out if the company has lost any business because customers couldn't reach an agent and place an order (rings with no answers, busy signals, dying on the hold button and things of that nature).

Also, estimate the dollar value of each call coming into the department by dividing the department's gross revenue by the number of calls it receives (the calls where nothing is sold need to be included, too). Once you know the revenue per call, you will also know how much money the company is losing every time somebody gets a busy signal or hangs up in frustration at a ring without an answer.

Next, send a questionnaire to all agents. Ask them to name three things they like about the present telephone system, three things they don't like and three things they would like to have, cost being no object.

Arrange for a central office "busy" study with your local telephone vendor. The central office will monitor all your trunks on an hour-by-hour basis and see how many times, and for how long, all of your trunks are busy. More importantly, they will count the actual number of busy signals returned to callers during each one of those busy periods.

To examine a worst-case situation, schedule the study for at least two weeks, when telephone business is normal to heavy. For instance, a department store might want to run one between Dec. 10 and 24 at the height of the holiday rush. Take the number of busy signals and multiply it by the dollars-per-call figure estimated earlier, and you'll arrive at an approximation of how much money your company may be losing.

After doing all this, generate a report to the powers that be. Included in the report should be all the information discovered so far: How much money your company is losing because of poor telephone service; what operational problems in the present system cause these losses; a general idea of what the optimal phone system should be and what it should do; and most important, how much more money your company could make if you solved the problems.

Costs vs. benefits

As with any purchase decision, benefits must outweigh costs. An ACD can easily run over $1,200 per working line (trunks plus stations). However, ACD users don't always measure benefits in terms of increased sales or revenues. A 911 Emergency Center installed an ACD that cost $2,272 per working line. They spent $250,000 on a system with 75 trunks and 35 stations. The ACD operates on 48-volt direct current power and has redundant CPUs, data buses and memories. There is a 12-hour battery supply kept full by dual chargers, and there are twin inverters running off the batteries to feed the displays on all agent sets. The switch room has a heavy-duty air conditioner, Halon fire suppressant and overhead sprinklers with a floor drain.

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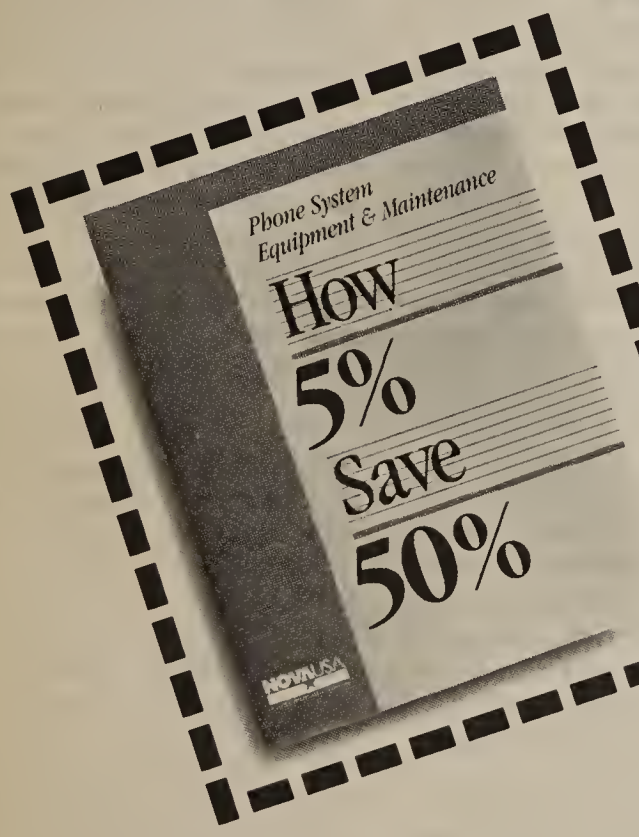

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Tracking PC software use

continued from page 1

10-point Multiple Value Plan last July, and DTSS' SoftStore, announced earlier this year, enable companies to create a mainframe data base of available software products.

Users can dial in with their personal computers to browse the data base and then submit orders. Orders are recorded; the end users' departmental budget is debited, and the product is downloaded.

But users who are considering beta testing these products say the product's ability to track personal computer software use and software serial numbers is more important than the actual electronic distribution of the software.

Randy Wiseman, coordinator of personal computer product support for Chevron Corp., said he is considering a beta test of DTSS's IBM VM-based SoftStore in order to ease the burden of distributing software upgrades to corporate end users.

Chevron currently gives users in nationwide branch offices written notification when upgrades are available. Users mail back a response card, and Wiseman's department verifies the users' rights to an upgrade by manually cross-checking the information against a data base.

With SoftStore, personal computers emulating IBM 3270 terminals will be used to access a mainframe and enter order information. That data is then checked against a data base to verify that the user is entitled to an upgrade. A message authorizing the download is flashed to the user the next time he logs on to SoftStore.

"This electronic software distribution package will cut down tremendously on the labor that goes into upgrading everybody's software," Wiseman said.

But even after determining who is entitled to an upgrade, Wiseman may still opt to ship the software product by mail to avoid what can be expensive dial-up charges. "If the upgrade is small enough, we will transmit it to the user," Wiseman said. "Otherwise, we will generate an order request centrally and ship the package."

Asynchronous transmission of programs that may consist of five or six diskettes, such as Ashton-Tate's dBase, takes too long to download, Wiseman said. "We have to mail the documentation anyway, so we may as well mail out the diskettes at the same time."

A manager at a major petrochemical firm scheduled to beta test Lotus' product also expressed concern about download times. "Rolling out a software upgrade to a user base of several hundred, or in our case, several thousand PCs, is very labor-intensive, expensive, subject to error and time-consuming," said the manager, who was instrumental in helping Lotus define LEDS' functionality by testing prototypes of the offering.

"If we have a single concern, it is how well electronic software distribution is going to work with today's file transfer methods and how much connect time it will take to download the package," he said. The central purchasing group within his company currently buys and distributes software to end users with hard disks, a process that requires a technician to visit each site to load upgrades to the hard disk.

For smaller applications and upgrades that can be distributed electronically, customers evaluating products say they would try to contain dial-up costs by downloading software at night when rates are cheaper. But that idea poses a security issue of whether to leave a corporate personal computer running unmanned all night. Although there are modems on the market that can bring up a personal computer, users say the cost of the devices would negate the benefit of the lower night rates.

Faced with the need to distribute software upgrades from a central location to nationwide branches, New York-based Metropolitan Life Insurance Co. plans to beta test the SoftStore package. "Because we are such a large company, it's an administrative nightmare to order personal computer software and hardware," said Steve Berto, technical manager. "We thought some way of automating this order procedure electronically might be more viable and quicker."

According to Mary Beth Marion, LEDS product manager for Lotus, many corporations do not have comprehensive information about how much money is being spent on micro software and hardware. "One of the benefits of an electronic distribution system is that it is also an automatic tracking system," she said.

End-user failure to mail in software license registration cards has posed problems for both software vendors and MIS managers in distributing upgrades, according to DTSS President Peter Manzo.

"The current means of keeping track of corporate end users aren't working well," Manzo claimed. "Updates don't get out there in time because the license registration process doesn't happen. The user is frustrated, too, because sometimes it takes weeks to purchase a software product through corporate channels. So, end users find it easier to use petty cash and buy applications at a discount store or mail-order house, rather than requesting it through the MIS department," he said.

Manzo said his firm's product is not designed to ensure compliance with site licensing agreements, but it can track the amount of copies being distributed.

"There is a degree of integrity and honesty involved in this. If there are dishonest people in the world, they're going to take advantage of license agreements one way or another, by either copying disks directly or by falsifying package counters in an electronic distribution system," Manzo said.

Some customers say current purchase order processing methods pose a barrier to electronic software distribution, as in the case where companies require multiple signatures to authorize purchase decisions. Still other companies require involvement of purchasing departments.

Paradyne to resell mux

continued from page 2

tion as a defensive reaction by Paradyne, which relies heavily on its current customer base for revenue. "Approximately 80% to 90% of the company's sales come from existing customers," said Steve Levy, communications analyst at Hambrecht & Quist, Inc. in New York.

As T-1 tariffs have plummeted, the communications needs of Paradyne's current customers changed and they began demanding T-1 products, according to Gerald Mayfield, vice-president at the Stamford, Conn., office of DMW Group, Inc. Mayfield also said established communications suppliers such as Paradyne have been asleep at the switch and had not foreseen the dynamic nature of the T-1 multiplexer market.

Analysts were divided on how successfully companies like Paradyne could maintain such control. Levy said Paradyne may prosper because users prefer to purchase modems, multiplexers and network control systems from one vendor, and the 3230 provides Paradyne with a comprehensive product set. The company also has a large sales force and distribution avenues to sell the product.

But Tim Zerbiec, vice-president at Vertical Systems, Inc., a Dedham, Mass., consulting firm, said T-1 multiplexer vendors such as Network Equipment Technologies Co. and Timeplex, Inc. have a good chance of displacing entrenched suppliers. Since modems and multiplexers only feed into more sophisticated backbone devices, customers may come to deem the backbone equipment provider as their chief supplier, according to Zerbiec.

There is also no guarantee that Paradyne's current sales force can sell T-1 multiplexers. The company's product line includes a multiplexer that can be used as either a point-to-point or low-end networking T-1 multiplexer. According to analysts, Paradyne has had little success selling the product, which is provided to Paradyne under an OEM agreement with Datatel, Inc. of Cherry Hill, N.J.

F. Selby Wellman, corporate vice-president of marketing at Paradyne, said the company plans to train its sales force slowly to sell the 3230 and will begin making a big push into the high end of the market in the fourth quarter. Paradyne has ordered only $1 million worth of equipment from Spectrum for the current year.

Popp said Trans World Airlines, Inc. and Reuters Holdings p.l.c. in London successfully beta tested the product.

Prices for the 3230 range from $30,000 to $180,000, and production shipments are now available.

RBHC cards may favor AT&T

continued from page 2

tional charge number and notify its customers that the cards are issued for the purpose of making toll calls only within a LATA, according to Garrison.

Furthermore, Garrison said, the RBHCs have been ordered to inform their customers that other long-distance carriers issue credit cards for inter-LATA calls and that the customers should contact those carriers for additional information. The Justice Department has also ordered the RBHCs to inform the customers that if they use RBHC credit cards, their inter-LATA calls will be carried on the AT&T network and they will be charged AT&T rates.

> The RBHCs are developing a new data base that would allow credit card customers to charge inter-LATA calls to long-distance carriers other than AT&T. The letter said the new system will not be implemented until 1989.

The telephone credit card system was instituted prior to the January 1984 breakup of the Bell System, according to Garrison. She said that, since that time, AT&T and the RBHCs have continued to issue cards with the same customer identification numbers.

In the letter sent to the seven RBHCs and signed by Charles Rule, acting assistant attorney general, the department noted that the RBHCs are developing a new data base that would allow credit card customers to charge inter-LATA calls to long-distance carriers other than AT&T. The letter said, however, that the new, nondiscriminatory system will not be implemented until 1989.

In the letter, the Justice Department requested that the RBHCs initiate the corrective actions outlined by the department within 20 days, and asked the RBHCs to provide, within three weeks, additional documentation regarding their credit card practices.

"We recognize that we need some additional information about what the telephone companies are doing and what their computer systems are capable of handling," Garrison said. A spokeswoman for Nynex Corp. said the company believed its credit card operation is not in violation of the Modified Final Judgment that broke up the Bell System. She said that Nynex would cooperate with the Department of Justice in its investigation of RBHC credit card operations.

Plan would make costs skyrocket

continued from page 1

In addition to enhanced data network suppliers, such as US Sprint Communications Co.-owned Telenet, McDonnell Douglas' Tymnet and Computer Science Corp.'s Infonet, data base service providers like Compuserve, Inc. and Nexis would also suffer the blow of increased operating costs from the charges.

While interexchange carriers and resellers have, since 1983, paid access charges, "the enhanced service providers were exempted on a temporary basis because they were fledgling companies," explained the FCC spokeswoman.

"Now they've had four years to adjust and establish a presence in the market. We feel that if other types of service providers have to pay charges, the enhanced service providers should have to as well," she continued.

Joaquin Gonzalez, a vice-president with Stamford, Conn.-based Gartner Group, Inc., echoed that opinion. "I don't see any reason why the VANs should be treated differently from other carriers. A data call takes up just as much capacity in the local loop as a voice call."

Not surprisingly, the VAN carriers disagree.

"The FCC is treating the computer service industry as if we're interexchange carriers," said Philip Walker, vice-president and general counsel with Telenet. "We are users of the long-distance network like other users. You can't single out a single class of user and slap him with an exorbitant fee like that."

Users bear brunt

Users are likely to bear the brunt of that change. Telenet's Walker estimated the access charge would add about $4.50 per hour for VAN terminal users. The VAN business is traditionally not a highly profitable one in the first place, and Walker confirmed that the charge would have to be passed through to the user because Telenet, and certainly smaller VANs, could not absorb such costs and stay afloat.

A $4.50 charge in many cases, Walker said, would almost double the per-hour fee users now pay. That would result in far less usage of public data networks (PDN) as users move to private lines or other less expensive alternatives for data transmission. "Users would abandon us, which would result in even higher rates as we spread out our fixed costs across a smaller base of users," Walker said.

"This will definitely have an adverse effect on both the providers and users of public data networks," said Page Montgomery, vice-president with Economics and Technology, Inc., a Boston-based consulting firm. He said he expects the cost of service to rise.

Gonzalez predicted the change will alter the way VANs do business. "I don't think this will be a killer for the VANs, but it will force them to change their strategy," he said, adding that Telenet and Tymnet may adjust to the change by concentrating more heavily on their private packet network business.

Unquestionably, Gonzalez added, the VANs are in a dilemma with regard to their public packet offerings. "These companies have been busy building more points of presence onto their networks, thinking all along that users wouldn't want to pay distance-sensitive charges on private lines to reach the PDN. Now it's going to cost both them and the user."

AT&T files for rate increase

continued from page 2

Accunet Switched 56 service line to its network. He said that when the company established its pricing structure for the service it did not anticipate the extent to which users would employ the service as a backup to dedicated services. Therefore, he said, the carrier planned to recover its costs from the usage-sensitive charges.

Coast-to-coast calls on Accunet Switched 56 service cost users $40 to $50 per hour, according to the spokesman. He pointed out that the $75 minimum charge is roughly equal to the cost of two hours of coast-to-coast service.

The spokeman said AT&T hopes that the proposed minimum charges will encourage customers to use the service. "If you are paying for the service, you are more likely to use it," he said. "When people see what it can do, we believe they will use it more often."

AT&T expects to recover about $1 million if the minimum usage charges are approved by the FCC, the spokesman said. The tariff is scheduled to go into effect July 18 if it receives FCC approval.

EDI user faces wary suppliers

continued from page 1

as a paperless, computer-to-computer method of processing business transactions — to transmit purchase orders electronically, process invoices and issue payments to suppliers, a process that is designed to reduce inventory, slash costs and speed product delivery.

Bergen Brunswig, the second largest pharmaceutical wholesaler in the country, began pushing the paper purchase order toward extinction in the late 1970s by distributing handheld order-entry devices to its 15,000 customers. Drug stores, hospital pharmacies and hospital clinics use these portable units to key in pharmaceutical purchase orders, which are then uploaded to a Bergen Brunswig distribution center.

But trying to convince Bergen Brunswig's suppliers to participate in similar EDI nets has been a tougher struggle, according to Robert Bone, data processing director.

The company already submits purchase orders electronically to more than 150 pharmaceutical suppliers, but it is still trying to convince 450 others to join the effort. The company also recently launched a pilot program in which seven suppliers submit invoices electronically. Bergen Brunswig is also trying to convince suppliers to accept payment through a bank automated clearing house.

Bone, former chairman of the National Wholesale Drug Association's (NWDA) Business Systems Committee, said he has used brochures, educational seminars and one-on-one meetings with suppliers to try to persuade them to employ EDI technology to handle major business transactions.

"It's fear of the unknown," Bone said of the lackluster response he's received. "We're trying to overcome this by educating our suppliers about the advantages of this method."

For Bergen Brunswig, the payback is significant.

"Each purchase order we issue electronically to a manufacturer reduces the amount of product inventory we have to carry," Bone explained. "Wholesalers operate on very thin margins, and inventory is one of the biggest assets we manage. The less inventory we carry, the more dollars we can turn over with the same amount of sales."

As a wholesaler, Bergen Brunswig stocks its inventory in anticipation of future retail orders. Transmitting orders electronically, instead of mailing them, enables the company to maintain the lowest possible inventory by reducing stock maintained for order lead time or kept to make up for variables in mail delivery times.

"When we mail a purchase order to a manufacturer, it may take from two to eight days to get there," Bone said. "When we transmit orders electronically, they go out at midnight and get there at one the next morning."

Bergen Brunswig submits orders to manufacturers by passing a batch file via dial-up lines to Sterling Software's OrderNet Services Division, a Columbus, Ohio-based EDI network service provider. OrderNet, which acts like an automated clearing house, sorts incoming messages from Bergen Brunswig and other firms and puts them in the electronic mailbox of each manufacturer. Suppliers call their mailbox and download the orders.

The orders Bergen Brunswig submits conform to Fixed Record Length, document standards defined by NWDA. OrderNet addresses incompatibilities in communications parameters and protocols.

The period between the time orders are placed and when they are physically delivered to Bergen Brunswig's distribution centers by the manufacturer is called lead time. "We have to carry inventory to cover that lead time," Bone said. "If it took us six days on average for a paper order to get to the manufacturer and four days for the merchandise to be delivered, we would have to carry 10 days worth of sales of it in stock."

Transmitting the order electronically means the company only has to carry four days' worth of inventory. Electronic order transmission also enables Bergen Brunswig to do away with stock normally kept to accommodate mail delivery fluctuations.

The first manufacturer cut over 15 years ago and enabled Bergen Brunswig to reduce inventory spread over 20 warehouses by $1 million.

Another gauge of the system's success is the number of times the company completely turns over inventory. "The faster you turn over inventory the better you are," Bone said. "Before we did this, we were turning over our inventory six times a year. Now we're doing it 9.8 times per year."

The company also hopes to further automate the process by which it receives invoices from suppliers. "Our people open 5,000 to 6,000 invoice envelopes per day," Bone said. If the company can convince more suppliers to send invoices via the OrderNet network, the drug wholesaler could simply download this information into its accounts payable system.

Automating a third business transaction, dubbed the charge-back, would save Bergen Brunswig a large sum of money. When a drug manufacturer signs a deal to provide products to a Bergen Brunswig customer at a lower than normal price, Bergen Brunswig receives a paper document, known as a charge-back, from the supplier. If this transaction is not completed correctly or within a limited amount of time, the pharmaceutical wholesaler cannot collect the difference.

A pharmaceutical manufacturer may, for example, agree to give a hospital a discount rate for a painkiller if the hospital uses that product exclusively. "The wholesale price of the product to Bergen Brunswig may be $20 per bottle," Bone explained. "Now the manufacturer tells us that they made a deal with a hospital to charge only $10 per bottle. When we sell it to the hospital, we charge the $10 and then send the manufacturer a record of that sale, and it reimburses us for the difference."

The $10 owed Bergen Brunswig in the interim is considered an outstanding receivable, a debt that the company would have to pay interest on if it didn't have the cash to cover the difference, Bone said.

Automating this business transaction also saved the company "hundreds of thousands of dollars" in uncollectables per year by eliminating inaccuracies. The paper-based charge-back system was generating 70 cases of paper per month, Bone said. The manufacturers entered the data into their systems manually before calculating what they owed Bergen Brunswig, an error-riddled process that left Bergen Brunswig to absorb the discrepancies.

NetView upgrade leads IBM blitz

continued from page 1

Leading the list will be a service point command interface to ease the burden of developing programs that exchange non-IBM network management information with NetView, Drescher said.

The interface will consist of 60 or 70 data sets defining how information can be presented to NetView, according to Rudolf Strobl, senior consultant at Arthur D. Little & Co. in Cambridge, Mass. Strobl, who chaired the session in which Drescher outlined the company's plans, explained the interface will be composed of software that will interpret and translate both IBM and non-IBM data structures. Currently, each vendor has to write its own software to define how information can be exchanged.

IBM will also unveil enhancements allowing a central site operator to manage a NetView application running on a remote host. The capability will aid customers who manage distributed networks, according to Strobl.

A new system command facility will enable NetView to monitor and control 370-architecture host software and subsystems, like IBM's Job Entry System. "This is really a broadening of NetView's management role," Drescher said. "We are adding systems control to network control." Previously, customers needed two terminals to monitor host software, one running NetView and the second overseeing system software.

The NetView enhancements will run only under a new release of VTAM, which will also include support for IBM's LU 6.2 protocol. Currently, LU 6.2 is incorporated in various subsystems, such as CICS. By including the protocol in VTAM, IBM makes the process of writing applications easier for users and software developers.

Drescher also outlined future NetView announcements by promulgating the first of two statements of direction. First, NetView will be brought under Systems Applications Architecture, IBM's blueprint for software application development intended to make it possible for these programs to run on a wide variety of IBM systems.

> Drescher also outlined future NetView announcements by promulgating the first of two statements of direction. NetView will be brought under SAA, IBM's blueprint for software application development intended to make it possible for these programs to run on a variety of IBM systems.

Second, IBM will develop a version of NetView/PC for the Personal System/2. Users had complained the Personal Computer line was not powerful enough to run NetView/PC. Once the operating system, communications software and application were loaded, approximately 100K bytes of memory were left to store information. Consequently, only rudimentary tasks, such as sending alerts, could be passed to the host. The Personal System/2's new operating system, Operating System/2, is designed to overcome such limitations.

In a separate but related announcement, Stan DeVaughn, director of corporate communications at NET, said last week the company had signed an agreement with IBM that will be announced shortly. NET, based in Redwood City, Calif., manufactures three T-1 multiplexers and a line of lower speed multiplexers. The IBM agreement is expected to be a private labeling arrangement whereby IBM will sell the T-1 multiplexers as its own equipment.

DeVaughn said NET will continue to market its products through its own sales force, and IBM will contribute to the funding of future NET products.

According to Drescher, the NetView enhancements and new version of VTAM will be available during the fourth quarter of 1987 or first quarter of 1988.

NTI boosts Lanstar PC

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its existing telecommunications equipment distributors and Eastern region direct sales force.

"The biggest quesion is: Will Northern's dealers be able to sell it?" Angus said. "One of the difficulties PBX vendors have in getting into the local net marketplace is that they can't sell them until they know how to do it, and they're not going to know how to do it until they've sold them."

The agreement with Banyan can bring more exposure to the Lanstar PC product, said Ben Occhiogrosso, a consultant with DVI, Inc. of New York. "Northern really had no brand-label recognition in that market segement. I don't know if this agreement is enough to spur on sales of the product."

The Lanstar PC offering carries a price of about $750 to $900 per connection. The starting price to connect 32 personal computers to the new small cabinet is $32,000.

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CALENDAR

June 18-19, New York — Understanding IBM Systems, Products and SNA. Also, July 27-28, Chicago. Contact: TeleStrategies, Inc., 1355 Beverly Road, McLean, Va. 22101.

June 18-19, New York — Telecommunications Management Software: How to Plan and Select. Contact: *Business Communications Review*, 950 York Road, Hinsdale, Ill. 60521.

June 22-23, Santa Clara, Calif. — IBM's Systems Application Architecture. Also, July 9-10, Boston. Contact: Gen2 Ventures, Suite D-5, 12930 Saratoga Ave., Saratoga, Calif. 95070.

June 22-23, Chicago — Networking the Corporate PC. Also, July 23-24, Atlanta. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810.

June 22-24, Chicago — Network Planning and Design with New Technology. Also, June 29-July 1, Detroit and Orlando, Fla. Contact: Network Career Advancement Institute, Suite 113, 202 Fashion Lane, Tustin, Calif. 92680.

June 23-24, New York — Packet-Switching Network Principles, Operation, Management and Applications. Contact: X.Concepts Limited, P.O. Box 6116, St. Charles, Mo. 63302.

June 24, Hartford, Conn. — Managing People. Also, June 24, Red Bank, N.J.; June 25, Princeton, N.J. and Springfield, Mass. Contact: Keye Productivity Center, P.O. Box 27-480, Kansas City, Mo. 64180.

June 24-26, San Francisco — Comptel Mid-year Seminar. Contact: Competitive Telecommunications Association, 120 Maryland Ave., N.E., Washington, D.C. 20002.

June 25, Tarrytown, N.Y. — Local-Area Networks: Future Directions. Contact: D.H. Brown Associates, Inc., Axe Castle, 400 Benedict Ave., Tarrytown, N.Y. 10591.

June 29-July 1, Napa, Calif. — Connectivity: Present and Future Directions. Contact: Dataquest, Inc., 1290 Ridder Park Drive, San Jose, Calif. 95131.

June 29-July 1, Washington, D.C. — Voice/Data PBXs. Contact: Systems Technology Forum, Suite 150, 10201 Lee Highway, Fairfax, Va. 22030.

June 29-July 1, Morristown, N.J. — Network Wiring Techniques. Also, July 15-17, San Francisco; Aug. 5-7, Boston. Contact: American Institute, 55 Main St., Madison, N.J. 07940.

HORRELLSCOPES

EDWARD HORRELL

In communications today, it takes more than just good business sense to survive; it requires celestial guidance.

Aries: Arians are at their best when their efforts are directed toward making money. They thrive on the glory of battle and a life of new adventure, and they will radically change their methods to remain competitive.

Thus, the Aries personality of MCI Communications Corp. must be dominant during its battle to keep up — or perhaps keep down — with AT&T price cuts.

AT&T is continuing to drop long-distance pricing — 4.8% recently — and MCI keeps on matching the cuts. We're not talking small change here. These price cuts represent big bucks — megabucks. And while MCI is a big company, not many companies have the pocketbook of AT&T.

One that does, though, is IBM. And the empyreal question is whether or not IBM will open its purse and help a gutsy MCI through these tough times.

This business needs MCI. And MCI needs its Aries personality to shine in this toughest of battles. Hang in there, Aries.

Cancer: Cancers are hypersensitive. Moodiness is inherent, and since the fickle moon is Cancer's ruler, moods tend to swing both high and low.

After the recent International Communications Association show in New Orleans, the mood of IBM/Rolm Corp. staffers is understandably sensitive.

The once-proud Rolm was virtually invisible at the IBM booth. The National Rolm Users Group, among others, wants to know where Rolm fits into the IBM fold and how the product will be brought to the market.

C'mon, IBM, let's get some questions answered so the Cancers at Rolm can worry about other things.

Leo: Leos will not tolerate any competition. They are also fond of individual effort and strive to be the center of attention.

So the Leos at Telenova, Inc. of Los Gatos, Calif., must be reeling after their award-winning Telenova station set was recently advertised by sister company Wang Laboratories, Inc. in the following manner: "Whose award-winning phone is this?"

Possible answers suggested in the ad included AT&T, Rolm, Pacific Telesis Group, Northern Telecom, Inc., Digital Equipment Corp., Apple Computer, Inc. and, of course, Wang.

Great heavens above! Here's an ad for a great telephone, and the manufacturer doesn't even get the recognition. Is Telenova just a manufacturer for Wang? If not, where does Wang get off advertising this unique telephone set as its own?

Virgo: This is the sign of a born perfectionist. Virgos consider their opinions superior and always think they know the best way to go about everything.

But the Virgos behind integrated voice/data private branch exchanges seem to have overlooked a good way to accomplish their galactic goal: sending voice and data using separate PBXs.

Communications managers are rediscovering the stand-alone data switch. And with nonblocking configurations, speeds of 19.2K bit/sec and prices around $100 per port, the discovery is a pleasant one.

Companies such as Equinox Systems, Inc. of Miami, Gandalf Data, Inc. of Wheeling, Ill., and Micom Systems, Inc. of Simi Valley, Calif., are showing users what reliable data switching is all about while letting their voice systems do their job — handle voice.

And as for the Virgos who believe they know the only way? Maybe it's time to learn some new tricks.

Cosmic catastrophe of the week:

With all the ways to make money in the $200 billion dollar telecommunications industry, one would guess that there is a galaxy of new money-making ideas.

But, rather than reinvent the wheel, the astromancers of Trans Western Publishing, Inc. in Wichita, Kan., seem to have copied someone else's idea. And, apparently, that's not all.

It seems that Southwestern Bell Publications, Inc. noticed that Trans Western's Yellow Pages were very similar to its own — including the typos.

Easy money? Hardly. Southwestern Bell's Media Division is suing Trans Western to the tune of five million bucks.

Libra: The Libra personality probably has as sincere an interest in people as anyone. This includes an interest in knowing how many people live in this world.

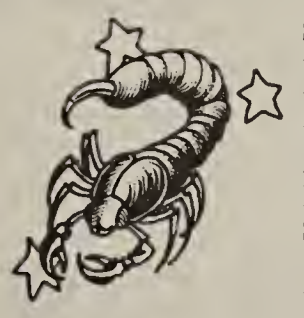
The United States Census Bureau recently announced that the census for the year 2000 will be conducted with an automated telephone polling system.

The system will use voice synthesis and recognition to verify the residence and ask basic questions of the called party. Answers will be entered by verbal response or by pressing keys on push-button pads.

The open question, according to the system planners, is how well callers will take to this method of data gathering.

The stars don't shine brightly on this idea. While technically possible, the possibilities for abuse by called parties would be immeasurable. What time of day will calls be made? What happens when baby-sitters, children and others, either intentionally or unintentionally, trick the system?

Horrellscopes predicts that the Census Bureau's pilot program will never reach flight stage.



Scorpio: The native of this sign faces two directions, both potentially favorable. And the two sides of Mitel Corp. of Boca Raton, Fla., fit the Scorpio bill.

On one side is the widely distributed Mitel product line. With more than 150,000 systems installed in the field, Mitel equipment has proven to be both popular and reliable.

The other side is the recent infusion of capital from British Telecommunications plc. With this heaven-sent support, Mitel appears to be poised for a major attack on the market share of the "Big Three" — AT&T, Rolm and Northern Telecom.

Watch for Mitel to appoint high-quality exclusive distributors for its flagship product, the nifty SX-2000. Considering the seemingly astronomical problems suffered by the IBM/Rolm connection, Mitel could move up quickly.

The stars may be lining up to tell us that the British are coming.

Pisces: Pisceans accept life with calm and resignation. But even the best Pisceans often have trouble accepting the surprises that occur after buying new telephone systems.

Pisceans and other users should learn the method of telephone-system cost evaluation called "life cycle analysis," which calculates the entire spectrum of costs to be incurred over the life of the telephone system, including modifications. Believe it or not, nearly 100% of all business telephone systems are modified in some manner each year.

Horrellscopic scrutiny reveals substantial differences in charges by PBX distributors for installations, moves and changes. Moves and changes are the most profitable work performed by interconnect companies.

So, perceptive Pisces, check your options — and double-check your costs. Over the life of your telephone system, the bills could add up at a cosmic rate. And when developing requests for proposal, make sure projected and potential moves and changes are reflected in your cost analysis.

While the stars may see all, they do not always tell all. Horrellscopes welcomes interesting information from any and all industry stargazers for inclusion in future columns. Contact *Network World* Features Editor Steve Moore at Box 9171, 375 Cochituate Road, Framingham, Mass. 01701, or call (617) 879-0700.

Horrell is president of Econocom Telecommunications Corp., a telecommunications equipment dealer in Memphis, Tenn.

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